# THE PRACTICAL TEACHER

With which is incorporated

THE PRACTICAL TEACHER'S ART MONTHLY

"It is to be noted that when any part of this paper appears dull, there is a design in it."—*Steele.*

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# Important Announcement.

IT is with sincere regret that the Proprietors beg to announce the discontinuance of the *Practical Teacher*. This course has been rendered necessary by the increasing demands of their educational publishing business in other directions. The present number of the journal will be the last.

In making this announcement, Messrs. Nelson and Sons desire to tender their sincere thanks to all who have afforded such ungrudging support to the magazine during the fifteen years of their proprietorship—to the subscribers and regular readers in all parts of the Empire who have so often and so generously acknowledged the help rendered to them in their daily work by the articles, competitions, and courses of lessons for which the journal has established a world-wide reputation; to the contributors who have ungrudgingly given of their best, and who enjoy to-day the satisfaction of having helped in a material manner to lead British education out of the darkness of mechanical drudgery to those methods of "sweetness and light" which are the distinguishing feature of our modern educational practice; and to publishers and others who have so freely availed themselves of the advertising columns of the paper for the purpose of making known those educational publications which are the wonder of the civilised world.

The Editor in his turn wishes to acknowledge his indebtedness to the numerous friends who have encouraged him, both verbally and by letter, in his efforts to keep the paper in the van of educational progress. He has had an audience of which any educationist might be justly proud, not only because of its numerical strength, but because it represents the most progressive and enterprising portion of the profession—the men and women who are not content with the "trivial round," but are ever on the watch for better ways of accomplishing the all-important work to which they have set their hands.

From all parts of the civilised world have come again and again the kindly words of greeting and of warm appreciation. The *Practical Teacher* has been the friend of lonely teachers on the confines of the Empire, linking them with "home" in a way which can only be fully appreciated by those who have left these shores. Nowhere has the paper had more loyal and constant friends than among the teachers of India. In Australia and Canada it has helped to pass on the torch to the outer edge of civilisation. It has assisted in moulding the educational methods of New Zealand. In South Africa, also, there are numerous teachers and educationists who have used its pages to help in the performance of that spade-work which is the basis of all political triumph; while in foreign lands, both near and far, it has stood for the best in British educational practice.

For educationists at home the *Practical Teacher* has during the past year endeavoured to forecast the great changes which are imminent in the curriculum and in English school method. The paper will not survive to see these changes effected; but it is some satisfaction to know that readers of the *Practical Teacher* will not be taken unawares when our primary education is reorganised on the practical lines upon which this journal has steadfastly insisted since its inception some thirty years ago.

# A Guide to Story-Telling.

## GREEK MYTHOLOGY.

BY REED MOORHOUSE.

HERE is rich treasure-trove indeed. I cannot understand why this subject is so neglected by teachers. They know that here we have the most beautiful stories in literature; that they are the embodiment of ideas of a race renowned for excellence in most that goes to make the joy of life; that these and Hebrew stories have permeated English literature, and that they are, therefore, essential to the proper understanding of books. We cannot expect a child to enjoy Milton, Shakespeare, or Macaulay, when he constantly comes to an allusion of which he is totally ignorant. "There is nothing that so greatly recreates the mind as the works of the old classic writers," says Schopenhauer. There is certainly no class of story that I have tried which appeals more to the child's imagination, or has manifested its power more in the oral or written expression of their thought. The personification of ideas is the chief characteristic of the child-mind; he thinks in things; rightly or wrongly he sees shadow as substance, dreams as realities. Why not guide him towards artistic personification? And what better guide than the myths of which I write? He will personify—nay, he must; then help him to do it beautifully. Put the example before him; he has a genius for imitation; more than that, he has the power of grafting new ideas so perfectly on his own stock that they live to flourish, a power you and I have in much less degree, if we have it at all. Give the child his due. So shall he find where lies the Beautiful Way. He will need the knowledge before he finishes his journey, be he never so fortunate.

How the scholars enjoy these tales! They laugh at Midas, with the donkey ears; sorrow at Orpheus's loss of Eurydice (surely sweeter story was never imagined); strain their ears to catch the crack of the beggar's neck when Ulysses wrestles with the impudent bully. It is good to watch boys and girls enjoy a snob's discomfiture; good to see them admire courage even in scamps (as pictured in the fight of Theseus with Kerkuon); good to know that they feel. Surely an important part of education this, to teach children to feel rightly, even as another part is to teach them to reason correctly. The production of the merely clever child is worth little to the world, worth nothing to himself. He is a marvellous instrument from which no music can be drawn, an elaborate machine which will not work, a wonderful waste. Give us the marvel, but let it utter the glory of sound; elaborate the mechanism of that which will be serviceable. As we must have mercy in justice, lest the latter be inhuman, so emotion rightly tempers all reason, for pure reason arrives at untenable positions, gives unworkable conclusions.

Great times we've had, scholars and teacher, binding the Pine-bender to his own willing trees, or sailing with the Minuai to find the Golden Fleece, bringing it home safely in time for the play-bell. Glorious adventures; how splendid to be brave! And we've also left the Argonauts with Hercules to search for the lost Hylas, thereby losing fame for friendship's sake. Glorious, too; how magnificent to love!

One of the values I find in Greek mythology is this. In most of the stories I have mentioned in my lists we have to condense the subject matter. Here it is often different, especially in the myths about the gods. We get a story-idea rather than a story; at all events, a jewel-story we can put in our own setting. Take, for instance, the myth of Proserpine, the personification of the idea of seed-growth. Following the beautiful presentation of the thought as suggested by the story, we yet can embody our own ideas. There are the delights of earth to be pictured; the realm of Pluto to describe as our power of imagination allows us; the foolishness of blind, wrong-reasoning sorrow, or whatever moral or ethical teaching we ourselves see in the myth (or put in it), to be woven into the story in our own way.

Let us take another example, the tale of Pan and Syrinx. There is the dance of nymphs and satyrs to describe; the meditations of the kind-hearted ugly god to consider; the cross-country chase after Syrinx to picture, as well as the metamorphosis and the wonderful climax, the making and playing of the famous Pipe. Dear, misshapen god Pan, thou type of misunderstood beauty or blundering good-nature, as we choose to take thee, what fine truths we can teach our children through the medium of thy story!

When I consider how pointed is the contempt of conceit in *Arachne the Spider*, how hot the anger against ruthless cruelty in *Latona and the Frogs*, how full of charity and proper feeling the noble story of *Philemon and Baucis*, I cannot but wonder that these myths are so little used. Yet in teaching them, let us bear in mind the idea of variation underlying our other schemes. Fortunately, these Greek myths are themselves diverse, and as we still have remaining to us a plentiful supply of other tales, our task is easy.

### GREEK MYTHOLOGY.

THE GREEK COSMOGONY.
THE TITANS AND THE GODS.
THE REALMS OF NEPTUNE AND PLUTO.
THE GODS OF OLYMPUS. (Representation in art.)
Jove, Juno, Vulcan, Mars, Mercury, Minerva, Apollo, Venus, Cupid, Momus, Ceres, etc.
OTHER MYTHICAL PERSONS AND MONSTERS.
Nymphs and Satyrs, Fates, Furies, Nemesis, Centaurs, Gryphons, etc.
PROMETHEUS, EPIMETHEUS, AND PANDORA.
STORY OF THE FLOOD. DEUCALION. THE PYTHON.
THE APOLLO MYTHS.
(*a*) *Daphne the Laurel*; (*b*) *Clytie the Sunflower*; (*c*) *Cyparissus the Cypress*; (*d*) *Hyacinthus the Beloved*; (*e*) *Ass-eared Midas*; (*f*) *Phaëton the Sun-driver.*

THE GODDESS MYTHS.
(*a*) *Arachne the Spider*; (*b*) *Tithonus the Grasshopper*; (*c*) *Latona and the Frogs*; (*d*) *Endymion.*

HERO MYTHS.
(*a*) *Cadmus, Builder of Thebes*; (*b*) *Perseus the Gorgon-Slayer*; (*c*) *Jason and the Golden Fleece*; (*d*) *Hercules the Labourer*; (*e*) *Theseus the Mighty*; (*f*) *Ulysses the Wanderer*; (*g*) *The Taking of Troy.*

OTHER MYTHS.
(*a*) *Philemon and Baucis*; (*b*) *Echo and Narcissus*; (*c*) *Cupid and Psyche*; (*d*) *Orpheus and Eurydice*; (*e*) *Pygmalion and Galatea*; (*f*) *Hero and Leander*; (*g*) *Bellerophon*

*and Pegasus ; (h) Philomela the Nightingale ; (i) Halcyon the Kingfisher ; (j) Daedalus the Aviator ; (k) Race of Atalanta.*

We have some difficulty in finding poems to go with these myths, not because of any lack of these, but because of unsuitability. One should not let the children miss such gems as Jonson's "Queen and Huntress," Tennyson's "Ulysses" and "Lotus-Eaters," Shakespeare's "Orpheus," which even children will appreciate. Some of the descriptions in "Endymion" will be enjoyed, as others of Keats's poems, in which the pure Greek spirit is so evident. And there are one or two of the idylls of Theocritus (Lang's translation) which are also useful. But most of the great poems are of no use to us for our purpose.

As the myths I have mentioned are not sufficient for a year's work (nor would I have them so), I add the following to be used with them—

| STORY. | REFERENCE. |
|---|---|
| *Reynard the Fox.* | Fable epic, Germanic. |
| *The Green Knight and Sir Gawain.* | Arthurian legend. |
| *Forty Thieves.* | *Arabian Nights.* |
| *Merchant of Venice.* | Shakespeare. |
| *Esther.* | Bible. |
| *Little Mermaid.* | Andersen. |
| *Boy who couldn't Shiver.* | Grimm. |
| *Chanticleer.* | Rostand. |

Also the following story-poems :—

| POEM. | AUTHOR. |
|---|---|
| "King and the Apple Dumplings." | Wolcott. |
| "Lady Clare." | Tennyson. |
| "Elegy on Mrs. Mary Blaize." | Goldsmith. |
| "Battle of Otterbourne." | Percy Reliques. |
| "Grenville's Last Fight." | Massey. |
| "Aunt Tabitha." | O. W. Holmes. |
| "Red Thread of Honour." | Sir F. Doyle. |
| "The Owl Critic." | F. T. Fields. |
| "Mary Queen of Scots." | H. G. Bell. |
| "Bernardo del Carpio." | Mrs. Hemans. |
| "Boadicea." | Cowper. |
| "Well of St. Keyne." | Southey. |
| "Jester Condemned to Death." | H. Smith. |

# Experiments in Dramatic History.

BY FRED. E. MELTON, SHENLEY, BUCKS.

(*Continued from page 674.*)

SUMMARY.

THE later years of the reign of Henry II. were most unhappy. After the murder of Becket it seemed as if all things conspired against his welfare. His enemies in France, joined by his three eldest sons—Henry, Geoffrey, and Richard—took up arms against him, and it was some time before the rebellion was quelled. Later, a fresh rising took place, and the king set out for France to lead his own armies. He was defeated; and then, to his horror, he found that his favourite son John had thrown in his lot with the rebels. This discovery broke the last threads of his life, and he died at Chinon in the year 1189.

Richard immediately crossed to England and claimed the crown. Already he had taken the Cross; and now, with the resources of England at his back, he set to work to raise money in every way to provide help in the Third Crusade, then being carried on against the Turks in Palestine. Having obtained all the money possible, caring nothing for government and much for warfare, he united with Philip of France and Leopold of Austria to drive the Moslems from the Holy Land, leaving England to the tender mercies of his brother John. Such a venture was after the king's own heart, and he swore to raise his standard on the walls of Jerusalem.

With an army of one hundred thousand men the three princes landed in Palestine, and for some time the Crusade was a success. But soon the other princes grew jealous of Richard's military skill, whilst his fierce temper and haughty manner gave great offence. Leopold was grossly insulted, and returned to his own land, vowing vengeance upon Richard if ever the opportunity came to pass. Philip of France, not satisfied with the secondary position in which he found himself, also retired from the Crusade, leaving Richard with ten thousand men to struggle on as best he could. Nothing daunted, he came within sight of Jerusalem, but was unable to lay siege to the city. In the end he obtained honourable terms from Saladin, the leader of the Moslem armies, and set out to return to England.

On the journey home he was wrecked on the coasts of Austria, and there imprisoned until a ransom of 150,000 marks was paid. In the year 1194 he reached England to find that, taking advantage of his absence, John had been plotting with Philip of France, and had taken up arms against him. Generous to a fault, he forgave his brother, but he determined to punish Philip, and war was declared. Hostilities soon ceased, but Richard frittered away the remaining years of his life in minor sieges and assaults, finding a soldier's death at Chalus in the year 1199. His warlike victories brought glory to his own name, but no lasting result of greatness to his kingdom.

At his death he was succeeded by John, although, as a matter of right, the son of his elder brother Geoffrey—Arthur by name—should have come to the throne. But "right" did not count for much with John Lackland. In 1201 Arthur was captured during a rebellion in France, and soon after he disappeared. John was accused of his murder; and although he strenuously denied his guilt, yet, on his refusal to stand his trial, his possessions in Normandy were forfeited. Next he engaged in a controversy with the Pope of Rome.

The Archbishopric of Canterbury falling vacant, the Pope nominated Stephen Langton for the position, but John refused to receive him. England was then placed under an interdict, and the state of the people was most unhappy. John cared nothing for that; and it was not until he was threatened by the armies of Philip that he yielded, and agreed henceforth to hold his crown as a gift from the Pope, and to pay an annual tribute of a thousand marks. This occurred at Dover in the year 1213. Learning no lesson from this disaster, he continued to oppress the people, until the barons decided to put an end to his unlawful acts.

Headed by Stephen Langton, and backed up by the common people, William Marshall, Fitz-Walter, and many other nobles demanded their rights, defined in a charter made by Henry I. Hoping to obtain soldiers from abroad, the king delayed his consent in London, but the barons took up arms against him. This so intimidated the king that he signed the Great Charter at Runnymede on July 19, 1215.

Pandulph, the Pope's Legate, denounced the barons' action, and obtained from Rome a decree annulling the Charter. But the barons persisted in their attitude, and the unhappy struggle wavered on until John's death took place in October 1216.

## Play IX.—The Capture of Richard I.

CHARACTERS.

RICHARD PLANTAGENET, King of England; PHILIP, King of France; LEOPOLD, Archduke of Austria—leaders of Third Crusade; CONRAD, Marquis of Montserrat; THOMAS DE MULTON, Lord de Vaux, an English noble; HUBERT, a squire of Richard I.; FRITZ and CARL, mercenaries in the service of Leopold of Austria; an Austrian innkeeper and his wife; knights, squires, men-at-arms of the three nations, Austrian peasants.

Time 1191–1193 A.D.

SCENE I.—THE CRUSADERS' CAMP BETWEEN ACRE AND ASCALON—RICHARD'S PAVILION.

[*The pavilion is furnished with a long trestle table and several low seats ; on the floor skins are scattered, and here and there are piles of armour and weapons ; in one corner stands a low bed, on which lies Richard I. ; close to the bed is seated Sir Thomas de Multon ; two men-at-arms standing guarding the entrance.*

*Richard.* [*Awakening, raising himself on one elbow, and looking round*] So, faithful friend! still here?

*Thomas.* [*Rising and going to the bedside*] Ay, my liege; I remained so that your sleep should not be broken.

*Richard.* [*Restlessly*] I long to be up and doing. 'Tis not the custom of Richard of England to lie and sleep like a sick child whilst blows are being struck in the Holy cause [*laughs grimly*]. Thou art a better soldier than nurse, De Vaux, and deal wounds rather than cure them.

*Thomas.* I but do my knightly duty, my lord. Be content until the fever has run its course. As to blows, few have been struck since the Lion took to his couch.

*Richard.* [*Angrily*] What meanest thou? Are there not nobles enough in the Christian host to do deeds of valour upon the bodies of the infidels?

*Thomas.* [*With contempt*] Yea, my lord, plenty. But feasts and carousings are more to their taste than blows.

*Richard.* [*Trying to raise himself in bed*] Feasts? Is this their boasted zeal in the service of the Cross? Would that these limbs could regain strength, and we of England would shame their sloth. What of my brother of France, Thomas?

*Thomas.* Methinks he would be more happy in his own land than here in Palestine.

*Richard.* Ha! sayest thou so, De Vaux? Had not this sickness held me here we would have been in Jerusalem ere now.

*Thomas.* I pray thee be calm, my lord.

[*Enter Philip and other nobles, the guards saluting as they pass.*

*Richard.* [*Loudly to men-at-arms*] Hence, men; we would be alone. [*Soldiers salute and withdraw.*

*Philip.* [*Advancing to the bed*] Greeting, brother of England.

*Richard.* [*Coldly*] Greeting, France! [*Turning to others who stand whispering together*] And to thee, lord of Austria. Ha, Conrad! what news bringest thou of success over the hosts of Saladin?

*Conrad.* My lord, knowest thou not that a truce has been proclaimed?

*Richard.* [*Loudly*] A truce? [*Turning to Thomas*] Thou hast not told me of this. [*Turning again to Philip, and speaking with arrogance*] France, to what do we owe this peace?

*Leopold.* [*Aside to Conrad*] Mark his angry look!

*Conrad.* Ay, I see it. Does he think all men falter at his frown?

*Leopold.* Not I for one. This king of half an island has too proud a stomach.

*Philip.* [*To Richard*] Art ever thirsty for blows, brother of England!

*Richard.* We of English blood came to Palestine to get them, my lord.

*Philip.* [*Soothingly*] All men know thy courage, Richard, and we but wait to see thee once more in the saddle.

This is the tableau of "After the Battle of Hastings," taken from the series of historical plays appearing in the *Practical Teacher*. "Harold's Oath" was performed in school by my class.—Miss KELLY, St. Teresa's School, Newtown.

*Thomas.* [*Pressing the king back upon the bed*] My liege, be calm. All men have not the spirit of the Lion of England. Much has been done, and the noble Philip and the chivalry of France need rest.

*Richard.* [*Loudly, and with great anger*] Rest, Thomas? Are they forgetful of their vows? Are we a troop of women that we should whimper when our limbs grow weary? And Austria, what of him?

*Thomas.* Speak not so loud, my lord; we may be overheard.

*Richard.* I care not who hears me. Tell me of Leopold.

*Thomas.* Good wine is more to his taste than hard knocks. I sicken of them all. Richard the Lion alone can lead the host, and all await his return.

*Richard.* [*In a pleased voice*] When De Vaux stoops to flattery his words should be treasured. Well! well! I must haste to recover. [*Puts his head down, and prepares to sleep. A noise is heard outside. Richard starts up again.*] Ha! who comes? [*Thomas goes to the door, looks out, and then turns to the king.*]

*Thomas.* The most noble Christian knights Philip of France, Leopold of Austria, and Conrad of Montserrat. [*Speaking to himself*] I fear me they come in an ill hour.

*Richard.* [*Beckoning Thomas*] Hither, De Vaux, lift me up that I may face these laggards as befits the majesty of England.

[*Thomas raises him and props him up in the bed, placing close to his hand the royal shield and helmet.*

*Richard.* [*Contemptuously*] Honeyed words, brother of France, but we like brisk deeds. Over this camp wave the lions of England, and the lion needs no rest when slaughter is toward.

*Leopold.* [*Starting forward angrily*] Let me tell thee, my lord, the eagles of Austria are no laggards in battle.

*Richard.* Thou sayest truly, most noble duke; they pick the bones of that which the lion has slain.

*Leopold.* [*Putting his hand to his sword*] My lord, such words are full of dishonour to the nobles who fight beneath my flag.

*Richard.* Lay not thy hand to thy weapon. Were I but able to leave this couch, on foot or on horse, with sword or with lance, thou shouldst have full chance to disprove the words upon this body of mine.

*Philip.* [*Stepping between*] My lords, must we quarrel who are banded together to do the will of God? Have we not sworn to lay violent hands upon none but the infidels?

*Richard.* [*Scornfully*] Ever peaceful, brother of France.

[*De Vaux crosses to Conrad and speaks to him quietly.*

*Thomas.* For the love of Heaven, go, or words will be spoken which will never be forgiven. 'Tis but the nettled spirit of a sick man.

*Conrad.* Ay, De Vaux, but a very proud spirit, methinks.

*Thomas.* [*Laying his hand to his dagger*] My lord, thou speakest of my king.

*Conrad.* I crave thy pardon, De Vaux; I spake not to dis-

please. [*Turning to Leopold and speaking loudly*] Come, my lord duke, let us take our leave lest we delay the recovery of his Majesty of England.

*Richard.* Ay, my lords, I needs must rest. Farewell!

*Philip.* May God grant thee swift return to health.

*Richard.* None prays more earnestly for it than does Richard himself. [*He settles once more upon his couch.*]

*Leopold.* [*Sneering*] Farewell, Lion of England.

*Richard.* Farewell, brave eagle of Austria.

[*Leopold, Philip, and Conrad pass out, leaving De Vaux bending over Richard.*

SCENE II.—THE FLAG MOUND IN THE CRUSADERS' CAMP SOME DAYS AFTER.

[*The flag of England flies alone upon the mound; men-at-arms, squires, and knights of the three nations are moving from place to place, others are seated in groups upon the ground; enter Leopold and Conrad.*

*Conrad.* [*Pointing to the flag*] There is our badge of servitude.

*Leopold.* [*Proudly*] I serve no master save Him whose cross I wear.

*Conrad.* Him we all serve, my lord; but the emblem of our earthly master floats upon yonder hill.

*Leopold.* What, Conrad, thinkest thou that we free sovereigns would submit to the orders of Richard of England? He is but a vassal of France!

*Conrad.* As you will, my lord duke; but why does his flag fly alone? Where are the lilies of France and the eagle of Austria?

*Leopold.* [*Haughtily*] I need no man's leave to place my flag where I will.

[*Richard tears down the flag, and puts his foot upon it.*

*Richard.* Thinkest thou this paltry rag shall wave by the side of the lions of England?

*Leopold.* [*Drawing his sword*] Too long have I borne thine insults. To me, men of Austria.

[*He advances upon Richard, who stands unarmed. De Vaux steps between with sword drawn, shouting, "To me, men of England," "St. George," "Richard of England." The crowd divides into two parties, drawing weapons hastily. Enter Philip of France, followed by his knights.*

*Philip.* Hold! what means this broil?

[*The parties fall back, leaving Philip, Leopold, Richard, and De Vaux in the middle.*

*Leopold.* My lord of France, must I submit to such insult to my flag? Rather will I leave the Holy Land, and return home, than stay to be thwarted by this English bully.

*Richard.* [*Contemptuously*] Ay, go, for fighting is the work of men.

*Philip.* [*Reproachfully*] My lord! my lord!

*Leopold.* My lord of France, I leave you. [*Turning to Richard*] I warn thee, proud knight, fall not into mine hands, for if thou dost thy pride shall be broken.

*Richard.* [*Scornfully*] Deeds, noble duke, count for more than words, and threatened men live long.

[*Leopold goes out scowling, followed by his nobles and men-at-arms. Philip goes also, leaving Richard standing with his men by the English flag.*

FINALE, SCENE III., THE ARREST OF RICHARD I.

*Leopold.* [*Angrily*] 'Tis but his arrogant spirit that seeks to be ever in the forefront.

*Conrad.* Such arrogance is an insult to the glory of France and Austria.

*Leopold.* [*Striding forward*] 'Tis true, my lord; his flag shall no longer fly alone. [*Beckons a squire to him*] Bid my nobles bring my banner hither. Haste ye and go. [*The squire goes out. Leopold raises his voice*] To me, men of Austria. [*Turning to Conrad*] The eagle of Austria shall soon wave above the lions of England.

[*The Austrian men-at-arms gather and follow Leopold to the mound, where he orders them to raise a fresh flagstaff. The Austrian nobles enter, carrying the banner, which is then lifted up by the side of the English flag. All cheer loudly, and other soldiers gather out of curiosity, and form a crowd round the flagstaff. Enter Richard and De Vaux.*

*Richard.* What passes here, De Vaux?

*Thomas.* 'Tis but some folly of the Austrian prince. Let us go, my lord.

*Richard.* [*Seeing the Austrian flag*] 'Tis a folly for which he shall pay. Has he dared to raise his flag by the side of that of England? Follow me, Thomas!

*Thomas.* [*Trying to restrain Richard*] But consider, my lord——

*Richard.* Silence, De Vaux, and obey. Follow me. [*Rushes to the crowd, and roughly breaks his way through to the middle until he is face to face with Leopold. Thomas follows him*] By whose authority hast thou raised this flag, lord of Austria?

SCENE III.—AN INN NEAR VIENNA.

[*Groups of men and women scattered about, seated at tables, on rough forms and stools. The host and his wife move among them, supplying them with food and wine. At one table Carl and Fritz are seated gaming and talking together. Enter Richard, dressed as a pilgrim, followed by Hubert, his esquire.*

*Richard.* [*Looking round and speaking in a low voice*] Hubert, go thou and get food and drink, so that we may break our fast.

*Hubert.* My liege.

[*Richard catches him by the shoulder, and, glancing rapidly round, whispers to him.*

*Richard.* Be silent, dolt! If thou hast no thought for my skin, take thought for thine own.

*Hubert.* My lord, I did not——

*Richard.* [*Testily*] Have I not told thee we are not safe in this country? What bad fortune wrecked me on these shores? Thou must guard each word, each act, each look.

*Hubert.* I will.

*Richard.* Ay, do, or we shall both see the inside of a dungeon ere many days be done. Now go.

[*Richard seats himself at a table as Hubert walks through the people towards the innkeeper, who is serving Carl and Fritz. They are lounging with their backs to the table, and their feet outstretched.*

*Hubert.* Mine host, food and drink; and, mark me, of thy best! [*He stumbles over the feet of Carl, causing him to spill his wine. Carl jumps up and pulls out a dagger.*]

*Carl.* Clumsy fool!

*Hubert.* [*Putting his hand to his weapon and facing Carl*] Maybe, but thy master!

*Carl.* You bark well, mongrel.

*Hubert.* And bite better, bully.

*Host.* [*Stepping between them*] My masters, shed no blood, I pray thee.

*Fritz.* [*Catching Carl by the arm and dragging him down to his seat*] Sit down, comrade, and drink. Whilst there is good wine we can spare red blood. As for thee, young fire-eater, art fresh from the wars, I can see. [*Host goes out.*

*Hubert.* Too fresh to bear the insults of every mangy cur who calls himself soldier.

[*Carl rises again, but Fritz pulls him down.*

*Fritz.* Gently, young master, gently. [*Fills a vessel with wine, and offers it to Hubert*] Come, drink with us, and tell us tales of prowess. [*Enter the host, bearing food and drink.*

*Hubert.* [*Pointing to the place where Richard sits*] Carry it to yonder table. [*Turning to Carl and Fritz*] I thank thee, but my master needs me.

*Carl.* Your master, young sir?

*Hubert.* [*Startled at his mistake*] Nay, who spoke of masters; I said "my friend."

*Fritz.* [*Lazily*] Have it thine own way, but methinks yon pilgrim is a strange comrade for such a man of war. [*Hubert turns away, and goes back to Richard. Fritz turns to Carl*] He said "master"; that I'll swear.

*Carl.* That did he. Yonder is no pilgrim, for all his peaceful dress.

*Fritz.* Nay; he has seen blood spilt, I'll warrant.

*Carl.* [*Rising quickly*] Our master must know of this. Maybe 'twill be worth our while to tell him.

*Fritz.* [*Draining his drinking vessel*] Come, comrade, let's begone. [*He rises, and they go out together; and, as they pass Richard, the king turns, so that his face is hidden from them.*]

*Richard.* Suspicion lurks in their glances. Unhappy lad, canst never restrain thy tongue? What need to seek quarrels when danger lies so nigh?

*Hubert.* [*Dolefully*] My lord, I——

*Richard.* Be silent; eat, and let us go before worse befall.

[*They hurry their meal, whilst the others in the inn continue to laugh and drink as usual. As Richard and Hubert rise to go, Leopold of Austria, Carl, and Fritz, with other soldiers, enter. The peasants rise, and shout, "Our noble Duke," "Duke Leopold." Richard pulls his cloak across his face as Carl points him out to the Duke. Leopold crosses to Richard and puts his hand upon the king's shoulder. The soldiers gather round and draw their weapons.*

*Leopold.* Why hide thy face, sir palmer?

*Richard.* My face is mine own, my lord.

*Leopold.* But this land is mine, and the law in my hands. Come, I would see thy face.

[*The peasants crowd round as Richard removes his cloak.*

*Richard.* Then have thy will.

*Leopold.* [*Stepping back a pace*] Ha! 'tis thou, Richard of England. Men, seize him and hold him fast! [*The soldiers take Richard by the arms. Hubert draws his sword, but Carl and Fritz throw him to the ground.*] So we meet again. Now shalt thou learn what it is to cross the will of the Duke of Austria.

*Richard.* It needs but little spirit to taunt an unarmed man. I do not fear thee.

*Leopold.* [*Turning to his men*] Go, lead him away and cool his pride in Austria's dungeons.

[*Soldiers march out with Richard and Hubert in their midst, whilst peasants climb upon tables, and shout, as Leopold turns to go, "Leopold of Austria!" "Leopold of Austria!"*

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*Hereward the Wake. By Charles Kingsley.* (*Macmillan and Co.*)

The brothers Charles and Henry Kingsley are, it is to be feared, among a number of gifted novelists of the mid-Victorian era whose works are nowadays but little read. The reason may be partly in the fact that nearly all the writers to whom we refer were endowed with a versatility of pen which was a source of danger to their output. It would, indeed, probably be little exaggeration to say that *Westward Ho!* and *Ravenshoe* are the only books by the Kingsleys which find any appreciable number of readers at the present time; and yet to mention only one other of their books, surely Charles Kingsley's *Hypatia* is one of the finest novels with a historical setting in the English language. The feeling is difficult to resist that many of the books to which we refer are deserving of something better than the obscurity and neglect into which they have fallen; it is therefore gratifying to see that the spread of education in this country has provided a new opportunity for bringing them to the notice of the younger generation, and that such series as Messrs. Macmillan's "English Classics" are being issued in order to meet the daily needs of our schools and colleges. The latest volume of this series which has reached us is *Hereward the Wake*, that fine and spirited tale of a brave man struggling with resource and determination against the Norman conquerors of his country. With the exception of Llewelyn in Wales and Bruce in Scotland, there is, we should say, no parallel in British history to the vigorous defence which the Saxon Hereward made in his marshy stronghold in the fastnesses of the Fenlands against the overpowering assaults of the Normans, and schoolboys into whose hands the book falls will find a rare treat in store for them. The complete understanding of such a story, however, by young people necessitates a good deal of *apparatus*, but everything that is needful will be found in the present edition—a life of the author and an account of the story itself by way of prefatory matter, and more than forty pages of explanatory notes and an index of reference as appendices. There are also two appropriate maps, one of the Isle of Ely and the other of the Fen districts generally, and the typography is excellent throughout.

# DRAMATISATION IN HISTORY.*

BY W. WHITTLES, B.SC.

AT the present time the chief method of teaching history which obtains favour amongst teachers is what may be called the story method.

This method of presenting the facts of history to the children in the form of a narrative is without doubt an excellent one, and is infinitely more satisfactory than the old system of presenting events, date by date, as was the custom in history lessons some years ago. These bald statements of facts, afterwards written on a blackboard to be memorised, made many of our history lessons dull and insipid, and the change to the story method has proved welcome both to pupil and teacher.

But despite its advantages the method has serious disadvantages which can be somewhat easily remedied.

First, there is the want of variety in method which follows when the story method is adopted entirely. The sameness, lesson after lesson, becomes monotonous to class and teacher alike.

Again, the stories, however well told, are apt to be intermingled in the minds of the children, and thus give rise to incorrectness. Besides, in the story method so much that is unimportant as history, and yet necessary if the story is to be a success, has to be given, that the children often fail to appreciate what is essential, and in answer to questions make statements which are quite irrelevant. To prevent this, some teachers question the scholars as the story proceeds; but this breaks the continuity of the story, and therefore causes it to lose much of its interest.

Then, again, unless the teacher has special gifts as a story-teller, he will often find it difficult to make his stories interesting enough to attract the attention of the class because of his lack of fluency.

Having often thought of the above, I came to the conclusion that the history lessons would be still more successful if they were presented to the children through the eye instead of through the ear. Experience has taught that what is seen is not only more readily grasped, but that it is also more easily retained than what is heard.

Thus it happened that I decided to try what I have called dramatisation. Instead of merely telling a story lesson after lesson, we on several occasions acted scenes from the history of our country. This method delighted the children, and I shall extend its use in this next school year.

The class (Standard V.) with which I tried this experiment was a mixed class, consisting of fifty-two children. They were ordinary elementary school children in a large school in one of the cotton towns of Lancashire; and therefore the objection often rightly raised against many school experiments—that they were tried with specially chosen classes under conditions other than those of an elementary school—does not hold.

The scheme consisted of a series of lessons on the "Social Life of the English People up to 1185." One of the first scenes we acted was the Anglo-Saxon village. After taking the lesson in the ordinary way and drawing plans, etc., on the board, I told the children that the classroom was going to be our village, and I was

* It is only fair to our esteemed contributor to explain that his work has been done independently of the articles published in this magazine. His paper has been in the hands of the Editor for a considerable time, but lack of space has prevented its publication.

going to make myself the chief, and they were to be the people living in the village. This being our first attempt, it was not very successful; but it got the children interested in the method and made them anxious to repeat the experiment in future history lessons. This led us later to split the class up so that each row of desks represented a village, and was supposed to have its own village moot. At their village moot they were asked to elect one person from each row (or village), whom they sent to the hundred moot; and there it was decided that we should attack a neighbouring tribe. (The neighbouring tribe was Standard III.) Of course it was all supposition: the attack never took place. In the presence of the children we held our hundred moot. All the members of the village understood that they must abide by what their representative in the hundred moot voted.

Having settled on war, this moot elected a chief to lead them against the enemy; and naturally, as teacher of the class, I was elected chief.

All knew that victory meant more slaves for us, whilst defeat meant slavery for most of us.

This lesson was enjoyed still more than the first, and proved much more successful, though it was not quite as good as I hoped to plan after a time. We were improving with practice, and that was gratifying. Questions asked later showed that the majority of the children had thoroughly grasped the relations of the various members of the village, of one village with another, and so on throughout.

Our next lesson was the most successful of all, and from it the class gained much. The subject was "Anglo-Saxon Trials—Compurgation and Ordeal." This lesson is much better suited to dramatisation than those mentioned above.

The lesson was introduced in the ordinary way. We once more imagined ourselves members of the English village. A boy was picked out and accused of a crime against village laws. However, no one saw him do it, therefore he could not be tried by ordinary means.

As chief, I asked the children if the boy in question was the kind of boy to commit such a crime. Having been careful in choice, I got a very unanimous opinion that he was not likely to commit such an offence.

Then I asked him to go round the class and get ten children who were prepared to swear that G—— R—— was not likely to have done the deed. Ten were readily got, and the accused told all that he was not guilty; and the ten then said they did not think him guilty, and so he was allowed to go free. Then we introduced the terms compurgation and compurgators, and, giving their derivation, easily made clear their meaning. I have kept this up; and since then, in cases of doubt, before being dealt with, any offender against class rules has been given a chance to get compurgators. One case was very remarkable. The monitor and the boy next to him had compositions which were almost exactly alike. There had obviously been some cheating. Both denied having cheated. I knew the characters of both, and was quite certain my monitor was honest. They tried for compurgators. The monitor easily got his ten; the other boy could not get one. Eventually he admitted his offence to me.

After compurgation we took trial by ordeal. We acted the chief forms with the same success as had attended our previous lessons. It is interesting to note that this lesson came off even better than the compurgation lesson, and the children were becoming quite enthusiastic about their history lessons.

In order to act trial by the ordeal of fire, I cut out nine strips of paper 30″ long and 2″ wide. These I put on the floor at irregular distances. Then I allowed various children to walk blindfolded over the strips, which were understood to represent red-hot ploughshares. The children took off their clogs to make the scene more like a real trial. They were, however, given to understand that the accused had really to walk barefooted. It was noticed that every boy who was tried by this means touched more than half of the strips or ploughshares; and so the children saw how difficult it must have been for any one, even though innocent, who selected this form of trial, to escape condemnation. When the trial was over, the children were told that the accused's feet were well bound for a week, and if, on being unbound, they were not healed, he was held to have committed the crime.

Next we acted trial by water. A boy of known mischievous character was brought before the moot, and, being unable to get compurgators, was given a trial by the ordeal of water.

A waste-paper basket served as a water vat, and a small stone in the bottom represented the article which the accused had to draw from the scalding-hot water. He put his hand into the basket and got out the stone, without looking. He experienced a little difficulty. Indeed, he spent just long enough in finding the stone and getting it out of the water to have badly scalded his arm. From this the children realised how difficult it must have been to find the stone in a large vat.

During this boy's trial the children were very attentive until the boy had found the stone. Then they showed signs, by the way in which they greeted him, that they realised he had spent too much time in getting the stone to have escaped condemnation.

Trial by holy bread was not acted, but I repeated for them, as nearly as I could, the words which the Saxon who chose such a method had to repeat.

The beliefs underlying these methods of trial were easily understood after the above little acts.

In a later lesson we acted a portion of a miracle play. We had been talking about the amusements of the people, and so we read a miracle play from the history books, and afterwards chose various children to act the play before all the class. We acted two scenes from the Flood, as given in Mr. Finnemore's *Social History of England* (Book I.). The play was very successful; and, no doubt, after a time the children will enter entirely into the spirit of the method and make it an unqualified success.

Of course the adoption of such a method means extra work for the teacher. He must search translations of original documents, so that the scenes shall be as real as possible.

As yet the method is only in its experimental stage. Very few words are spoken by the children acting the parts, except in the case of a miracle play; but I hope some day to have a series of short historical dramas, which will not only give the children opportunities for acting their parts, but for speaking them also.

A WELL-KNOWN FACT

That Nelson's "Highroads of History"

make the history lesson go like music.

# Our Needlework Column.

BY J. A. FLEMING, AUTHORESS OF "COMMON-SENSE NEEDLEWORK."

### Bead Bags and Purses in Plain Knitting.

THESE attractive hanging pockets are quite within the ability of any girl of eleven years of age. The beads are threaded on the cotton, and knitted in with the stitch as the work proceeds.

D.M.C. Cotton Perle No. 8 and steel needles No. 16 are useful sizes, with beads varying from Nos. 9 to 12. All three may be much finer, and they will produce a correspondingly daintier effect; but it must be remembered that the finer the work the more difficult it is, and the more trying it is to the eyesight. *Older* girls will probably like to produce finer work.

Crochet silk may take the place of the cotton, but the difference in appearance is not as great as that of the cost.

Some bags are sewn to mounts or frames, and others are worked without. Silver, gilt, or steel metal beads are used, as well as glass ones, matching or contrasting with the knitting thread.

It is very necessary to see that the beads will take the thread, and that the needle is fine enough to allow the beads to pass over it with the double cotton, before any quantity is bought. Not more than three strings of beads should be threaded at one time, until the worker has had some little experience, or tangles and knots will occur. When the beads are used up, the thread can be cut and fresh beads put on. The joining of the cotton should always take place on the plain knitting needle. Sometimes it is possible to tie the knitting thread to the string of beads, and to slip the beads from one to another over the knot. Very often, however, the latter is too fine to stand the strain of the passage over the knot.

An expeditious way of threading the beads is to draw the beads to the end of the string, and to insert the needle into the beads as the string is withdrawn. A fine straw or millinery needle is convenient for this purpose. Needless to say, girls delight to thread the beads, even if they have to pick up one at a time.

Procure the frame first, that the bag may be knitted to fit it. The clasp of the bag photographed measured about 3″ across.

Two steel needles, No. 14.

One ball D.M.C. Cotton Perle, No. 5.

One skein of beads.

Sometimes both sides are knitted separately, and then joined together, but this one was knitted in one piece, and the "cast on" and "cast off" ends were sewn to the frame, while the sides were joined as far as were needed.

*To work the Bag.*—Cast on 34 stitches. Knit two plain rows.

The beads are knitted in on alternate needles, and the worker will have the *wrong side* of the work facing her when the beads are at the back of the strip.

Each line of beads commences at the same end of the needle.

In the photograph each bead was knitted in with alternate stitches, but a bead can be knitted with every stitch when desired.

*To knit in the Beads.*

1*st Needle.*—Slip the first stitch; draw a bead quite up to the needle. Throw over the cotton, and knit a stitch, leaving the bead at the back of the work. Knit one stitch plain and bead a stitch, and continue knitting one stitch and beading a stitch until the end of the needle is reached, finishing off with a plain stitch.

2*nd Needle.*—Knit plain.

3*rd, or Bead Needle* S 1, K 1.—Bead 1 K 1, and continue to the end of the needle, finishing off with two plain stitches. This makes the beads in the second row to come above the knitted stitches in the previous needle.

Continue working alternate bead and plain needles until a length equal to a double square is formed. It may be longer or shorter as preferred, but that is an average proportion.

Knit two plain needles, and cast off in such a manner as not to draw in the work or to leave it too slack.

These purses wear better lined than when left unlined. Ribbon or silk to match, or in a contrasting colour, is employed.

Sew the ends into the clasp by double back-stitches, using the knitting cotton for the purpose where possible. It *must* be the same colour.

### An Infant's Gown, with One-piece Yoke and Sleeves.

Wool is an ideal material for babies' wear, combining as it does the maximum of warmth with the minimum of weight. Many mothers who are alive to that fact when clothing their older children quite overlook it when making their baby's *first* garments. They swathe the tiny body in cambric muslin or calico, providing in the majority of instances only *one* flannel garment. As if to deprive the child of its legitimate amount of warmth were not a sufficient injury, such mothers put it into *long* clothes, which are only so much additional weight for both nurse and baby. Finally, they fold over most of this extra length, to keep the baby's feet warm, they say, fastening it over the infant's body, and thus confining and cramping the little limbs, which ought to have the utmost freedom. In order to keep these garments dainty and spotless, much labour is involved at a time when the mother is least able to bear any extra strain on her strength. A new baby always means more work in any household, even when its clothing is of the simplest construction; and, to crown all, the garments referred to are worn only for a *month* or *six weeks*, so that, just when the mother's time and attention should *all* be given to the health and comfort of her little ones, she must set to work to prepare a *new outfit*. The pattern presented is intended to be worn as a *first* gown and to be continued until the child is eight or nine months old, thus making for economy of time, labour, and expense. Its use is

kindly allowed by Mrs. Holman of Briars, Belmont, Surrey, to whom I beg to acknowledge my indebtedness.

The little frock is only about 20″ from neck to foot, so unnecessary weight has not to be borne, and freedom of limb is not curtailed.

*To Draw the Pattern.*—Take an oblong of paper 13″ by 10″. Double it three times each way. Open it out, and mark the corners A, B, C, D.

From A mark E $\frac{1}{2}$ in.
From A mark F $2\frac{2}{3}$ in.
Join E and F by a straight line for centre front.
From A mark G $3\frac{1}{2}$ in and 1 down.
From B mark H $2\frac{3}{4}$ in and $\frac{1}{4}$ down.
Draw a curve from F to H, passing through G.
From B mark I $\frac{1}{2}$ in and 1 down.
From B mark J $2\frac{1}{4}$ down and 2 in.
Join I and J by a slight curve.
From B mark K $3\frac{1}{2}$ down and $\frac{2}{3}$ in.
Join J and K by a straight line.
From D mark L $1\frac{2}{3}$ in and $\frac{1}{2}$ up.
Join K and L by a slight curve.
From D mark M 4 in and $\frac{1}{4}$ up.
From C mark N 2 in and $\frac{1}{3}$ up.
From C mark O 1 up.
Draw a curve from L to O, passing through M and N.
From A mark P $2\frac{3}{4}$ down and $\frac{1}{4}$ in.
Draw a slight curve from O to P.
From A mark Q $2\frac{1}{2}$ down and 1 in.
Join P and Q by a straight line.
Draw a slight curve from Q to E.
Join Q and J by a dotted line.

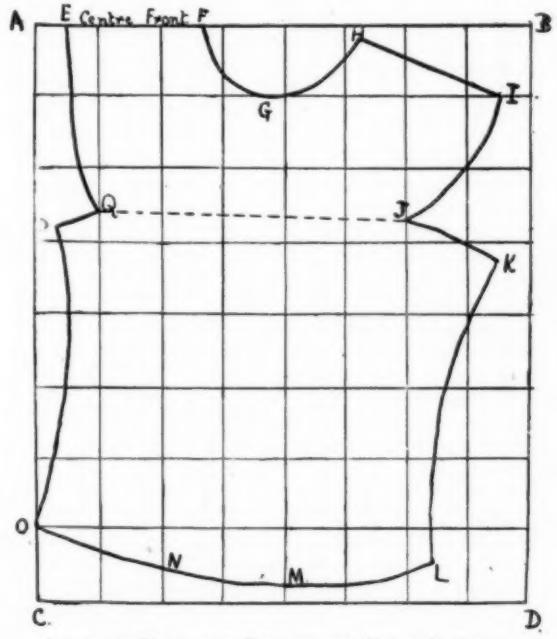
*Cutting-out in Material.*—$1\frac{1}{4}$ yards of viyella 32″ wide were used. Tear off a 10″ strip the whole length of the material. This piece is required for the one-piece yoke and sleeves and for cuff linings, as well as for the yoke lining, which extends as far as the shoulders.

*Yoke and Sleeves.*—These are cut all in one piece, thus effecting economy in labour and ease in putting the garment on, coupled with the minimum of bulk round the armholes. Double the strip of flannel across 13″ from one end. Lay the centre front of the pattern to the fold, and cut it out, allowing for turnings. Cut out the lining by the dotted line. Pin the yoke and lining together. Run them together along the ends of the back opening and round the neck. Turn the lining inside out, and tack round the edges so that the stitches are just visible between the two folds. Tack the yoke $1\frac{1}{2}$″ from the edge to keep the lining in position. Turn in the edges of the lining and herringbone them so that the stitches come between it and the yoke. As flannel folds cannot be *pressed* like calico, the edges should be turned under and *tacked* all round, ready for setting on to the skirt.

*Sleeves.*—Join the sleeves by run-and-herringbone. Cut the cuff lining by the dotted line, allowing a little extra for joining. Join the seams of the cuff lining by running. Turn it inside out. Place it on the *right* side of the sleeve, seam to seam. Run the two together on their outer edges. Turn the cuff over, and herringbone the loose edge to the wrong side of the sleeve. Be careful to see that the stitches come *under* the cuff. A little can be cut off if the lining be too deep. The cuff should be turned over about 1″ deep at the seam. The model was ornamented in snail-trail stitch, but any other fancy stitch could be selected for the decorating of the garment.

*Skirt.*—The larger piece of flannel is cut across the middle to form two widths for the skirt.

Run-and-herringbone the widths together. Turn up 3″ for a hem, and herringbone. Cut 6″ down the middle of one of the widths to form the vent. Herringbone a 1″ hem down each side. Make a nick half-way across the left-hand hem at right angles with the bottom of the vent, to allow the right hem to fold properly over the left one. This forms a pleat, which is secured by two rows of back-stitches on the right side.




ONE-PIECE YOKE AND SLEEVES FOR INFANT'S GOWN.
13″ × 10″.

*Front.*—Lay a shallow boxpleat in the middle, one on each side a little shorter, and one on each side shorter still. The space between the pleats should be rather

wider at the bottom than the top, to give a little more width for freedom of movement. The pleats should not be sewn, only pinned, until the yoke is ready, that the whole may be made to fit nicely. Pin the middle of the yoke to the middle of the skirt, leaving the lining free. Pin the sleeve seams down to about 1½" from the top of the side seams. It is better *not* to shape out the tiny armholes until the skirt and yoke are firmly attached, otherwise it becomes difficult to make the corners of the yoke fit well. Let out or take in the pleats to make the yoke fit exactly. Tack the right sides of the yoke very firmly to the skirt, making the ends of the back quite continuous with the vent.

Ornament the edges of the pleats in the same way as the cuffs. Secure the yoke to the skirt by the same stitch. Tack down the lining, and hem it to the skirt. The under-arm curve may now be cut out by the sleeves, and the edges neatly bound with ribbon or galloon. No draw-string is needed, and it is better not to put lace round the neck for so young a child, as it so soon becomes damp and uncomfortable. Make three button-holes on the right-hand back, and sew three small pearl buttons on the left-hand side.

## OUR PHOTOGRAPHIC COLUMN.

### THE CAMERA AND THE HOLIDAYS: SOME USEFUL HINTS.

BY THOMAS A. BRIGGS.

THE charm of the camera is known to many, and it is a potent spell. Those who fall under its dominion are to be counted as the happy beings of the earth, for the eye of the camera teaches them to see beauty in many places and at all seasons of the yearly round.

But there are those who fall under the magic spell for a short period only—mainly during the midsummer holidays—and it is to these that I wish to speak more especially.

I will assume for the moment that you have one of the popular box-form cameras. Most of us start with these handy instruments; and though they have not the various movements the stand type possesses, yet their great convenience makes them very acceptable on a holiday. A model which has a focussing arrangement is the most desirable, for with it you may obtain many figures and groups at close range, which otherwise would have to be missed. Focussing correctly needs a good judgment of distance, and a very useful tip is to imagine how many six-feet men could lie down between the camera and the object. I have used this hint repeatedly, and find it most useful. The mind seems better able to think in a few large units like three sixes than in many small ones—eighteen feet. However, it is best to practise the guessing of distances at home a few times with a tape-measure.

Those who care for a more portable apparatus should consider one of the well-known folding types, a machine that you would carry with as little thought as you would your pocket-book.

Cameras are made nowadays equal in size, when closed, to a box of vestas, but this is carrying the limitation too far. The picture is too small to be of much service. If you have not already a camera for the season, get one of the quarter-plate size, for it will give negatives from which useful enlargements may be made, or contact prints which *can* be seen by the naked eye. The best style of camera is the folding roll-film type, with plate attachment for dark slides. This will allow the ever-ready and convenient spools of film to be used for flying visits; or the cheaper glass-plate for more leisurely outings nearer home.

In this series I will mention a few well-known makes: The "Kodak," No. 3, at 72s. 6d.; Houghton's "Ensign," at 63s.; Butcher's "Carbine," at 77s. 6d., with anastigmat lens; and the Thornton-Pickard "Sunbeam," at 70s.

All these models differ in minor details only, and have serviceable lenses, fair amount of rise to the front, and single extension. They are, of course, loaded in daylight, and this is the second item of importance; for if you have only six plates or films, it is always the *seventh* negative which would have been the picture of a lifetime! The photographer with a film camera and a spare spool of film secures this. I need not quote the virgins of old and their lack of the necessary oil.

A very good rule is to develop a few of your plates while on tour. This gives a sense of sureness which no other method can possibly give, for your camera may spring a leak unexpectedly, or the shutter may have been playing tricks and not closing as it should. One or two developed plates will show this at once, and will prevent further futile exposures and waste of plates. I think there is nothing more exasperating than to arrive home after a delightful holiday, having promised prints to all and sundry, only to find the plates hopelessly fogged. I may say in passing that there is one slight drawback in taking your camera with you to the seaside, and that is, the fatal facility with which promises of large numbers of prints are made. These, I am grieved to say, are too often like the proverbial pie-crust.

The dealer's dark room suggests itself at first as a place in which to make the tests. I am sorry to say, though, that my experience of the average shop convenience, so temptingly advertised, has not been happy. They are, in very truth, "dark" rooms; the ruby light frequently consisting of a guttering candle, while the daylight filters in at the most inconvenient season. The best way is to carry a tiny outfit with you; for in these "tabloid" days an outfit of chemicals can comfortably be carried in a large purse; while a couple of vulcanite dishes, and a small folding ruby lamp made of fabric, will furnish all the apparatus you need to carry. These fabric lamps are not good enough for ordinary development, but will serve very well for changing plates. The whole of the dishes and chemicals will not occupy a larger space than a six-shilling novel.

For a dark room, use the hotel bedroom after nightfall, with the blind drawn down. Unless there is a very strong light outside, the room will be as safe as the finest chamber built for the purpose. If you are not satisfied about the darkness of the room, open a drawer, and place the dishes in that for developing the plates. The time development method comes in very useful in a case like this. Liquid developer, such as rodinal, may be easily carried in a "Swan" ink-bottle, which fits in a wooden case, guarding it from injury. Tabloid hypo may also be carried for fixing, and is extremely convenient.

For the washing of plates, place them in the water-jug all night, hanging them by a bit of wire just under the water at the top of the jug. The hypo, which is

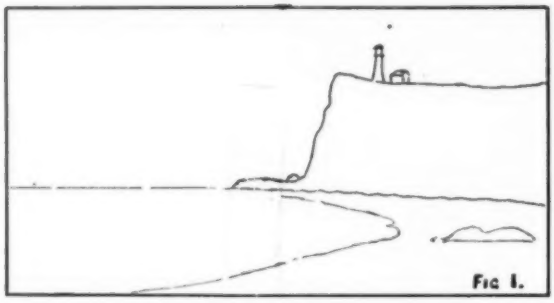


Fig 1.

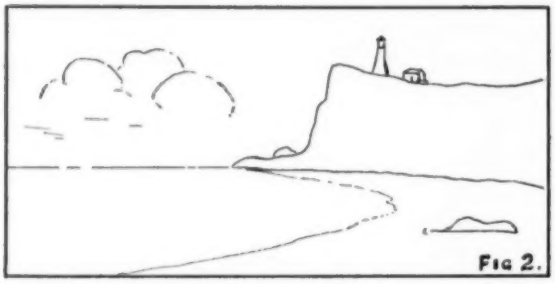


Fig 2.

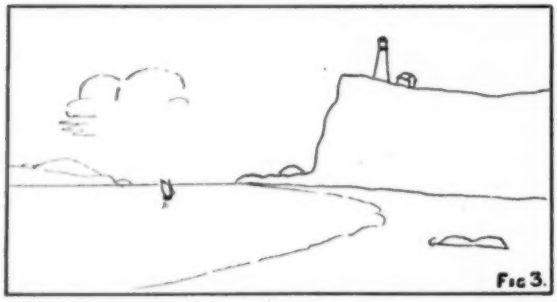


Fig 3.

heavier than water, will then drop out of the plates to the bottom of the jug.

One of the difficulties of picture-making on the sea-shore is the one-sidedness of the landscape. Fig. 1 shows this clearly. It will be seen that the cliff on the right-hand side contains all the interest of the

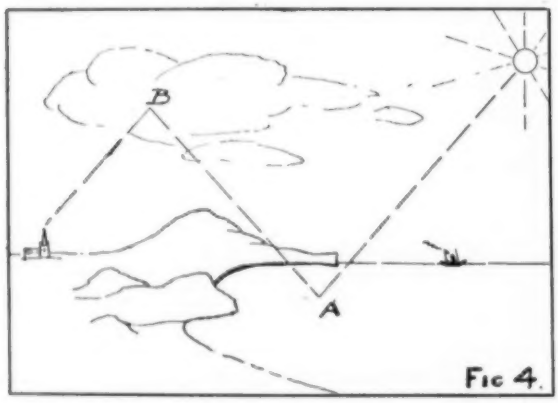


Fig 4.

picture, while the left-hand side is merely blank sea. Fig. 2 shows an improvement of the same scene, in which some white clouds give a little balance to the interest. Fig. 3 is a still greater improvement, for the distant hills and the little boat produce a much better balance of composition. Of course it may not be always possible to obtain objects like this on the sea; but wherever feasible, some object should be included in the picture which will reduce the lop-sided effect.

An exposure meter should always be taken to a strange district, especially seaside and mountainous places, for the light is very deceptive in quality. Even places some little distance inland are very brightly lighted, for the sea acts as a huge mirror, reflecting sunlight back on to the clouds, from whence it is re-reflected back on to the land, as shown in Fig. 4, where the points of reflection are indicated at A and B. The exposure for the church in the picture would be somewhat less than for a similar scene many miles inland.

Summing up, the following points are very useful if kept in mind :—

See that the shutter is in good order.

Take a sling-case for a folding-camera, as it leaves the hands free.

Take vulcanite dishes, developer, lamp, and wire.

Take English plates to the Continent, as the provincial dealers very rarely stock them.

Never wrap up plates in printed paper, or you will find the reading matter will transfer itself to the sensitive surface.

Never try to change plates under the bed-clothes. It leads to the most dire confusion.

A holiday spent with the camera can be made more enjoyable than any other I know of; and it has the lasting joys that come with the knowledge that the pictures will retain some of the fragrance of the summer days, so glorious and yet so far away.

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*Swedish Folk-Dances. By Nils W. Bergquist.* (*George Philip and Son.*)

The name of Ling is so honourably and intimately associated with the history of the physical training of the young that any book upon the subject coming from an authoritative Swedish source is deserving of high respect and the closest consideration. M. Bergquist's *Swedish Folk-Dances* is an English translation of a most interesting publication by the society "The Friends of Swedish Folk-Dances" in Stockholm, and has been carefully rendered and edited with a view to its systematic use, primarily in New York schools, but also in schools generally where the English language is spoken. M. Bergquist is the instructor of physical culture in New York public schools, and his book has the advantage of an introduction from the pen of Dr. Ward Crampton, who is also one of the public officials of education in New York. In that city, it is worthy of note, where there are, in an altogether remarkable degree, large numbers of immigrant families from many different European nationalities, the value of folk-songs and dances in school work is readily discernible, the ceremonial observation of festal occasions affording an immediate demonstration of the readiness with which the heart of man, woman, and child turns instinctively to the music and rhythm in which generations of ancestors have delighted. It might perhaps be argued from such a statement that the folk-dancers of any particular nation would be therefore limited in their usefulness, but it should be remembered that the fundamentals of folk-lore are common to every race and age, and that there is in particular a primitive simplicity about folk-lore of the Swedish nation, as indeed of most northern peoples, which appeals with a singular directness to the mind and affections of almost every young child. In the present volume there are twenty-three dances altogether, arranged progressively in order of difficulty and of complexity of step, and each of them is accompanied by full instructions as to the way in which it should be performed, and the educational purpose it is intended to enjoin and serve. There are some very good pictures illustrative of the Fjalluas Polska, the Dal Dance, the Weaving Dance, the Oxen Dance, and others. The interest of the readers of this very delectable book will be stimulated by the personal note in Dr. Crampton's statement that the author, M. Bergquist, has himself taken part, as his forefathers did in the days that are gone, in the dances which are here collected.

# INDUSTRIAL EDUCATION IN GERMANY.

EDUCATIONAL Pamphlet No. 18, recently issued by the Board of Education, and procurable through any bookseller for ninepence, is one of the most valuable treatises yet published on the new education problem. It should be read by all who are at all interested in the adolescent question. Mr. Clay, the author, journeyed through Germany in the spring of 1909 to inquire into the working of compulsory continuation schools there, and has cleverly contrived, by recording statistics and impressions, in focussing the advantages of this system to the social and industrial life in Germany; and at the same time he has let in a lurid light on the shortcomings of this country in all those matters which affect the after care of the elementary school child. After reading this book one will easily understand the reason for the tremendous advance that has been achieved by the German Empire educationally, commercially, and imperially since the great war of 1870, which awakened her to a full consciousness of her national strength, and inspired her to develop a *Sozial-politik*. For several years attendance at evening continuation schools has been compulsory for boys in various parts of Germany, and the tendency is for compulsion to become general throughout the Empire. Even in Prussia, where there is no general law, the principle of compulsion has spread so rapidly that Essen is now the only large town where compulsory continuation schools do not exist.

At first, owing to various reasons, the system was not a great success; but latterly, since the curriculum has been remodelled and made to centre round the *occupation of the pupil*, and teachers specially qualified have been appointed, great advances have been made.

No German boy leaves the elementary school under fourteen (in England over fifteen per cent. leave between twelve and fourteen). During the last two or three years there he has had considerable training in drawing and handwork, to create an early bias for skilled manual labour. Experience has shown that those who have had good and extended instruction of this kind will not readily fall into unskilled callings. In Munich, a town about as large as Birmingham, an eighth year has been added to the elementary school period to give this definite bias, and to form a basis for the reorganised continuation trade schools. The success has been remarkable. In 1908, of 2,200 boys who left the highest class of the elementary schools, 2,150 went at once into handwork or other skilled occupation. Compare this with Mr. Cyril Jackson's statement respecting this country: "Seventy to eighty per cent. of the boys leaving our elementary day schools go straight into blind-alley work."

About three months before the time for leaving school, the teacher gets into touch with the boy's parents, explains to them the Labour Bureau, and gives them pamphlets containing full information of the various local employments. As soon as his vocation is chosen, the boy joins the evening school, attending four or six hours weekly for two or three years.

If the occupation chosen is an unskilled trade, he will join a general continuation course calculated to increase his general intelligence.

For clerks there are commercial courses; and almost every trade in a large town has its own particular course, each complete in itself. The following statistics for Strassburg (population, 170,000—a town about the size of Bolton) are interesting:—

EVENING SCHOOL STATISTICS.

*Boys on Roll.*

| | |
|---|---|
| (*a*) Unskilled | 517 |
| (*b*) Skilled | 1230 |
| (*c*) Commercial | 414 |

Amongst the separate courses provided for skilled workers may be mentioned the following:—

Courses for bakers, druggists, grocers, hairdressers, stonedressers, locksmiths, tinsmiths, upholsterers, saddlers, goldsmiths, and engravers.

The most striking feature in connection with the German system is the active co-operation of the trades, employers of labour, and parents.

The trade societies and the Chambers of Trade contribute liberally and voluntarily to the cost of apparatus and machinery for the purpose of teaching, and the employers are kept in close touch with the technical classes through their advisory school committees. In Strassburg forty different trades have representatives on the advisory committee. These have the right to and do visit the classes, and give valuable opinion as to the direction of the practical and technical teaching. As a result the teaching is essentially useful, and the practical teaching is given by master workmen in the trade. At Strassburg, for instance, the class of confectioners visited was being taught how to make the sugar decorations on the elaborate German cakes and tarts. Similarly, practical workmen teach printing and typesetting, and at the school visited there was the newest type of machine, that had cost £400, and varied sets of type in every style to the value of £600.

The parents regard the compulsory attendance as a survival or continuation of the elementary school course. They are ready to complain when the employer prevents them from going to the classes. At a recent exhibition of evening work in Strassburg 3,500 people attended.

The German attitude to the evening school work is quite liberal, however. The altruistic view is not forgotten. By lessons in citizenship the boy has brought home to him not only that he has duties and rights, but that his craft or guild has an honourable history; that he is but one of an ordered community, state, and empire; and that the welfare of all is bound together.

It is impossible to consider the question of making attendance compulsory without at the same time providing for shorter hours of labour. There is a growing tendency in Germany to substitute day attendance for evening, and the employers are by law obliged to give their workers facilities for joining evening schools.

The Municipal Labour Bureau completes a well-organised system for looking after Germany's embryo citizens. All boys about to leave school are sent compulsorily by the authorities to the Bureau, and a card of details is filled in. Something is done from the beginning to check the thoughtless drift into the over-crowded ranks of errand lads, copyists, and clerks, and to prevent the unscrupulous exploiting of boy labour. In the words of Miss Durham, who has recently reported on Juvenile Labour for the London County Council, "Germany has got down to bed rock the recognition of the fact that her responsibility towards her children citizens does not cease with the end of their elementary school career. They must be regarded *in statu pupillari* during adolescence; the employer of young labour has a responsibility."

# Far and Near.

## INTERESTING ITEMS DRAWN FROM VARIOUS SOURCES.

### Cheap Text-Books.

THE curator of the Horniman Museum and Library, Forest Hill, London, S.E., is an educational benefactor, for he goes on turning out excellent little *brochures* on his exhibits which have more than a mere local application. The latest small handbook, published at one penny (post free, twopence) by P. S. King and Son, 2 and 4 Great Smith Street, Victoria Street, Westminster, S.W., deals with basketry, pottery, spinning, and weaving, and will provide material for numerous lessons on "common things." Here is a quoted passage from an article on what the *North Country* calls "twine":—

"Every region of the earth has its own string. The Arctic peoples prepare thread and twine of sinew, some of them as fine as our best cotton, only very much stronger. The Japanese make excellent string of the mulberry paper; and the Chinese, as well as many peoples south of them, use bamboo splints, while the silkworm goddess is the patroness of the Far East. All over the Pacific Islands the coir, or prepared fibre from the outer husk of the cocoanut, is the staple from which string is made, not [only] by twisting, but chiefly by braiding.....In Mexico and South America the pita fibre and cotton furnish the principal staples, but all over temperate North America the *Apocynum cannabinum*, or Indian hemp, was made into yarn and twine, and woven into cloth. The hair of ruminants and of the dog easily lent itself to the spindle, and among some tribes skins with the fur on were cut into very thin strips, and these were twisted and woven into blankets. Bast from trees is frequently twisted into a kind of single ply twine, and used even for bow-strings.

"Sinew dressing is a textile art. The long and tough bundles of sinew are removed from the legs of the larger mammals, very carefully cleaned of any flesh or fat, and dried. At convenient seasons these bundles are shredded just as men and women pick oakum. This shredded sinew is used without further preparation for seizing or wrapping thousands of things together."

### Taking no Risks.

According to an interesting article in New York's *Saturday Evening Post* (an excellent weekly budget at five cents, which has no equal in this land), we are a race that risks little, and insures everything except our insurance companies. Here are a few samples:—

"An Englishman was offered the management of a certain company at a salary of three thousand dollars a year for at least two years. These terms were satisfactory, but he distrusted the ability of the company to pay him. So he took the job and then insured the salary for two years, paying a premium of sixty dollars. In eight months he was discharged; and, after a little suit in court to show whether it was for good cause, which was decided in his favour, he got two hundred and fifty dollars a month until the two-year period was up.

"Not long ago a speculative London bank failed after attracting deposits by the offer of ten per cent. interest. Hundreds of persons lost money when the institution went into bankruptcy; but a shrewd Scotsman had deposited five thousand dollars in the institution and then insured his deposit with a special policy. He got his capital back intact, and cleared about five per cent. on his money after the insurance premium had been deducted.

"A church organised an entertainment to pay off its mortgage. Seven hundred pounds was needed. The treasurer of the enterprise feared that it might fall short of this sum in case of a rainy evening. A friend advised him to insure the receipts under a policy that would make up the amount needed if receipts were lacking. When he got quotations on such a policy he found the premium would come to about sixty pounds.

"'Insure for eight hundred pounds, then,' counselled the friend, 'and that will cover the cost of the premium too.'

"He did so. The premium came to seventy-five pounds, and the receipts amounted to only six hundred and twenty-five. The underwriters paid one hundred and seventy-five pounds."

### A Useful Phrase.

We often object to the influence of the American language upon the parent stock, but we have to thank the "States" for a phrase which has no exact equivalent on this side. This is "to make good," upon which a writer comments wisely in the current *St. Nicholas*.

"If we should make a new dictionary to-day we would have to put in it the verb 'to make good,' which ten years ago was scarcely known. We should describe it as meaning to live up to our promises of the hopes of our friends, to prove ourselves, to bring things to pass—in a word, to be true to what seems to be in us. We must then put beside our definition certain clippings from the daily papers, telling how in such and such a year this governor or mayor or railroad president made good or did not make good.

"Certainly it is interesting to notice how widely this new word has come into use, and how closely it expresses something that we all vaguely feel, but could not express before. In olden days if a father sent his son out into the world he said some such word to him as this: 'We expect you to make a success, John,' or, 'We look for you to be a great man, John.' But now a father is much more apt to use simpler speech, and just say, 'John, we expect you to make good.' If success and greatness should come, all very well, but the main thing is to make good."

### Nothing New under the Sun.

Talking of street noises, here is a note on the familiar "pip-pip" of the present Pneumatic Age:—

"Cassell's *Dictionary of Quotations* mentions it as a street cry of about 1898, but attempts no explanation of its origin. It is of course an effort to reproduce the sound of a pneumatic cycle-horn. Here, however, is a quotation just two hundred years old, in which the identical phrase appears. Gay, in his *Trivia*, a description of walks about London, gives a spirited

account of the great Frost Fair held on the Thames in the winter of 1715–16 :—

'When hoary Thames with frozen osiers crowned,
Was three long Moons in icy fetters bound.'

He describes the sad fate of 'Doll,' the apple-woman, who lost her life in the breaking ice :—

'The cracking crystal yields, she sinks, she dies.
Her head cropt off from her lost shoulders flies.
"Pippins!" she cries—but death her voice confounds,
And "Pip, Pip, Pip," along the ice resounds.'

The coincidence is curious."

### Civic Centres.

The people of the States have dealt very seriously with the street Arab. In this country he remains an Arab, and we open for him with a grudge our uninviting school playgrounds, while we sternly warn him to "keep off the grass" of our parks. Here is the method of Chicago :—

"Up and down Chicago are what are called 'Civic Centres.' They are small parks, in the centre of which are 'field-houses.' These field-houses contain a gymnasium for boys and a gymnasium for girls, a free library, a reading-room, an assembly hall, which is used by various organisations, and a series of club-rooms, the use of which may be had for the asking. Thus all sorts of people, young and adult, assemble in the 'Civic Centre.' In the summer they enjoy outdoor sports, and a special feature is made of accommodation for parents and for seniors generally, who may care to watch the sport. As time goes on these civic centres are growing more and more inclusive in their aims, and it appears as if before long they would become the general meeting-place of different sections of the community. In particular, the clubrooms are used by organising committees of different kinds, and it is found not only that they are more desirable, for every reason, than rooms in 'saloons' and the like, but that the members are much more likely to assemble at a common rendezvous, and the average attendance at the committee meetings has increased astonishingly."

### The Return to Nature.

Here is an interesting bit for music lovers. Will some prodigy send me "the tune of the streets"? There is a music of London, and I want to hear it :—

"I have read with interest your note on Mendelssohn and the bee in the overture to 'Midsummer Night's Dream,' says a correspondent. A niece of mine, of only ten summers, has a remarkable gift of musical precision; she can tell the pitch of any sound she hears. Her father, to test her powers, asked her what note a passing bee was humming. In reply the child said the sound was made up of three notes—G, G sharp, and A; I think these were the ones mentioned. Anyway, on reaching home, the score of Mendelssohn's 'Bee's Wedding' was turned up, and sure enough the great composer had these three notes continually recurring, which when played quickly give a capital suggestion of the hum of the insect. The incident not only proved the child's capacity, but serves also to show that the master listened to Nature before he turned to his manuscript."

### Wisdom while You Wait.

I have been dipping into a book rather clumsily entitled *What Matters*, by Miss M. Macandrew, published by Messrs. Chapman and Hall, and here are a few of the results of my angling :—

"Loyalty involves an infinite capacity for being robbed without a murmur—robbed of ideals."

"The pathos of living for this world is that on it we have no claims."

"Many a present difficulty has its solution in the past."

"Those who force others into a back seat should remember that it is the best place by far for developing the critical faculty."

"The Christian passes from expecting all of self, much of man, and nothing of God to expecting nothing of self, little of man, and all of God."

"Better for death to overtake the soul while still striving than that it should find man satisfied with some lower aim reached."

"To pose as a recluse because certain functions are dull when one's natural instinct is for human intercourse is a pose that is quickly detected."

"To knock at Heaven's door when we have no intention of entering is something worse than impertinence."

### Saul (and David) among the Prophets.

Mr. C. R. L. Fletcher and Mr. Rudyard Kipling are the latest recruits to the motley ranks of school-book editors, and their joint production will be a juvenile "history," for which the aforesaid David will tune the harp. (The parallel must not be made to go on all fours.) We shall, at all events, have an interesting collection, and unconventional enough to suit the best of our teachers. The closing strain of David's harp will be as follows. We reproduce it, with due acknowledgments to the publisher, Mr. Henry Frowde :—

"Oh, Adam was a gardener, and God who made him sees
That half a proper gardener's work is done upon his knees,
So when your work is finished, you can wash your hands and pray
For the Glory of the Garden that it may not pass away!
*And the Glory of the Garden it shall never pass away!*"

### A Sunny Picture.

With London "under the hammer," one longs for the *Alpes Maritimes*, as described by a writer in the *Saturday Westminster*. Here is a bit of his rhapsody, which you can read while waiting for the Coronation procession :—

"High on the hillside now! The road wanders below unheeded. Not even the mistral could carry its dust so far. Yet here too is the dust of the underleaf of the olive.

"To look up through the olives to see the fantasy they make of the sun is as though one sees it through old glass which has long been buried. There is just such a mist of colour as the light beats on the leaves that would enshroud its presence—that would vainly enshroud the living—and rends its cerecloths in pieces, darting, leaping, flashing from spear-point to spear-point, touching the silver with rose and gold.

"Yet the olives are strong, although they tremble, for they wrestle with the tresses of the sun and make fitful shadow, and in their shadow the earth is car-

peted with violets. Miles on miles of olives! Miles on miles of violets under the olives! Persephone, Persephone, here, not in plains of Enna, thou shouldst have wandered! Here the scent had lulled Pluto to forget his purpose. All kinds are there. The big dark violets, the white violets, the double violets, the small wild violets, which have the sweetest scent of all. Very precious is the harvest. Often when one sees the peasants walking along the lanes, bearing big bundles or carrying sacks upon their shoulders, the fragrance that heralds their coming and lies in the air behind them along the high-walled or embowered lanes tells that they are carrying a load of violets to the scent factory. There the essence is distilled, and you may buy of it in Cannes or Paris or London. But never the Provençal fragrance. Never the arrowy odour that parts the earth breath and is made one with the whisperings under the olives. That you can never transmit or recapture."

## MENSURATION.

BY AN INSPECTOR OF SCHOOLS.

SOME time ago I wrote an article on "areas," and indicated some practical methods of dealing with them. Recent experience has shown that other hints on the same subject may prove useful. An exercise was set, at a visit to a school within the last fortnight, to a class who had been having lessons on the areas and perimeters of rectangles, and I gave two examples which were not so successfully worked as I anticipated.

The first was this: "A garden is 156 square yards in area, what might be the length of fencing required to enclose it?" I explained that any overlapping at the corners need not be taken into account, but that I simply wanted to know the length of the four sides. The children seemed to find difficulty in attacking the question. To aid them I asked the rule for finding the area of a rectangle, and the answer, L × B = area, was readily given. Some who had been taught the rule for finding the square root of a number attempted to obtain the answer by getting the square root of 156. They did not perceive that 156 is not a perfect square, and that this way of obtaining a solution is cumbersome and somewhat difficult. I then asked what might be the length and breadth of a rectangle with an area of 32 square yards. This started them on the right tack, and the following answers to the original question were received. The probable lengths of the *two* sides of the rectangle were stated as :—

12 yards and 13 yards.
39 yards and 4 yards.
26 yards and 6 yards.
78 yards and 2 yards.

I then asked them to calculate *mentally* the lengths of the *four* sides—namely, twice 12 + twice 13, twice 39 + twice 4, and so on.

I will not record the success achieved, but would ask individual teachers to try the experiment with their own classes.

The heading of these articles has been, with few exceptions, "Common-sense Hints on the Teaching of Arithmetic," and the children's common sense was tested by inquiring as to which of the answers obtained was the likely one. By hastily drawn diagrams they were led to see that a garden 13 yards by 12 yards would be a much more convenient and probable one than any of the other three.

The second example given was: "The two sides of a rectangle measure 40 feet and 44 feet respectively; find the perimeter of a second rectangle whose area is 160 square feet less than that of the first one." The result was somewhat disappointing. The area of the second rectangle should have been readily given as 1,600 square feet, and the probable perimeter 40 × 4, or 160. Such an exercise as this might be followed by asking the children to draw the first rectangle to scale, and find by means of their ruler how much farther a boy walks who goes round a garden of this size, and also from corner to corner (that is, perimeter and diagonal), than one who simply walks round its four sides. The diagonal will be about 60 feet, and I have seen a solution clumsily, yet accurately, obtained thus: $(40 \times 2 + 44 \times 2 + 60) - (40 \times 2 + 44 \times 2)$, instead of giving the length of the diagonal as the distance one boy walks in excess of the other.

Other exercises might be given *ad infinitum*, and would do much in the way of training the children to think and use common sense. In my daily rounds I see much of what is called practical arithmetic, and some of it is very unpractical. I should like to see more done in the way of the conversion of a scale into actual measurement, and *vice versâ*.

Children in Standards IV. and V. do much drawing of a practical kind in the way of measuring doors, cupboards, etc., but when asked to use the scale of a map and find the cost of travelling from London to Liverpool, or Edinburgh to Glasgow, at a penny a mile, most frequently fail in giving even an approximate cost.

This is a useful exercise, and further illustrates my point :—

Two persons start to walk from A. One goes 3 miles due north, then 4 miles due west; the other goes 8 miles due east, then 6 miles due south. Find by means of the ruler how many miles they are apart at the end of their journey.

The children should be able to gather that a line drawn through A, joining the points where the journey ends, will measure 15 units of the scale they have used, and therefore the actual distance will be 15 miles. They might then compare the areas of the two triangles ABC and ADE, and the areas of the two rectangles of which they form a part. They also might obtain, with the aid of their ruler, how many miles C is from D, and the time it would take a man to traverse this distance were he to walk 3, 4, or 5 miles an hour.

*Note.*—In my last article I emphasised the fact that if the sides of a triangle are in the proportion of 3, 4, and 5, then the triangle is a right-angled triangle. Since then I have discovered that this is also the case if the sides of a triangle are in the proportion of 12, 5, and 13, because $12^2 + 5^2 = 13^2$. There may be other cases, but I confess I only know of these two.

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*Arithmetic by Modern Methods*, published by Mr. H. J. Smith, Breams Buildings, E.C., at 9d. net, is a useful little volume. The author does not pretend to provide a text-book of arithmetic, but he explains, with the thoroughness and clearness of a practical teacher, some of the more common methods of approximation. Student and teacher alike should find the book of value.

# Our Art and Handwork Section.

## A HOLIDAY SKETCHING CLASS.

BY ROBERT T. MUMFORD, HEADMASTER WILLESDEN POLYTECHNIC ART DEPARTMENT.

FIG. 1.—BY R. T. MUMFORD.

FIG. 4.—BY R. T. MUMFORD.

LET me imagine the reader is a member of my party (of course this presupposes, gentle reader, that you are an enthusiast in outdoor sketching, although you may not have gone far). I have already discussed generally the chief matters dealing with sketching "outfit," and we will now imagine ourselves safely landed at the tiny village station of Goudhurst, Kent, *via* the much maligned South-Eastern Railway.

Our Saturday's arrival was specially designed, allowing a restful day in which to wander round and enjoy the anticipation of the joyous sketching days in store. And how delightful are these wanderings in search of the picturesque! What an intense pleasure, shared by such a few! "We can only see what we have learned to look for. Nature does not reveal her beauties unsought." So says one of our greatest living painters, Mr. George Clausen, R.A., in his admirable *Lectures on Painting*. The average person will try and impress you that he quite appreciates Nature's delights. "What a lovely sunset sky!" says he; or, "What a beautiful view!" (generally measuring its beauty by the total "mileage" he can see); but his "sphere" is so limited that only the obvious facts appeal to him. The many beautiful everyday subjects with which we are daily surrounded are "hidden treasure" to all but artists, whether in paint, prose, or poetry.

A beautiful silvery cloud moving slowly over an evening sky, forming a lovely harmony of silvery purple, only called forth a remark from my neighbour (a camera enthusiast): "Look, that cloud has hardly moved the whole evening!" I am sure that was the outstanding fact from his point of view. He did not note how the form of the big cloud "made" the composition of the picture, and how the scheme of colour was blended in one harmonious whole by the peculiar silvery gray evening atmosphere. But think, reader, of Whistler's point of view. How he taught us to see the beautiful effects of twilight and night, and how he rendered them as no artist before him had attempted. Do I digress? Well, my only reason is to impress on the student that until he *feels strongly the particular beauty and charm of the subject to be rendered*—not until then will he do anything worth looking at. Do not sit down simply with the idea of making a photographic copy of a subject (as an artist friend scathingly used to remark: "You can buy a penny picture post-card if you want that"). But try to do something really "personal," showing your own feeling and appreciation of the beauties you are trying to portray; something "seen through your own temperament." This will invest the subject with an artistic stamp, and your work will at least be "interesting" if nothing more.

There is no doubt that the one great thing is this big matter of "feeling your subject." Think what it means when an artist can, after a long (I had almost said "loving") look at a beautiful effect, *turn his back* on the subject, and render a splendid account of it in this way; and yet some students cannot do it after sitting staring at it for a week!

But let us get to work, and tell of some of the methods of teaching in a holiday sketching class. In a large class composed of art students and many "practical teachers" the capacities vary considerably.

Perhaps here and there would be quite a struggling beginner. In another batch we find fully-fledged students, who can put in a sketch in oil or water colour in one sitting; and one can well judge the immense advantage which accrues from the constant interchange of ideas and experience in a class of this kind.

I will start on my daily round with a batch of workers in the *oil medium*. They are commencing a sketch, of which Fig. 2 is a good illustration. On a toned ground, preferably a medium warm colour (which has been prepared some days before), they are blocking in their masses preparatory to commencing colour. The student whose work I am illustrating has covered the back of her board with half a dozen little preparatory composition notes to guide her as to the "design" of the subject (she has already spent much time and thought in the figure composition class in her art school), and feels that the *composition is everything to her*. Another "shirks" design, and so I find her struggling, knowing not where to place her big dark mass of trees, her sky-line, nor how to arrange the clouds. I can't resist a slight dig at this student, as she is always asking in school work when the design class is due: "Must I learn design? I don't want to do designing from plants!" I remind her of a striking quotation from quite a sumptuous book, lately published, on that master of figure composition, Frank Brangwyn, A.R.A., by Walter Shaw Sparrow. Here it is: "Some critics have been puzzled to account for the command displayed by Brangwyn in the practical methods of decorative design. It is forgotten that first knowledge in this very useful field came partly from his study of plants with Mr. Mackmurdo, and partly from training with William Morris." But students of to-day want to begin where Brangwyn leaves off—they won't *travel the whole road*. I always advise a course of design even for landscape students, as it gives them a feeling for pattern and arrangement.

I readily call to mind still another who had no idea of composing or placing a sketch on her canvas. She related the opinion of her uncle (a famous artist) that "there was no composition in her sketches," and plaintively asked what she could do to remedy this defect. I knew that her fault was a common one, and a few straight questions as to her art study quite accounted for her weakness in the question of design.

To sum it up, she had never studied design; never thought of making pencil studies of trial composition, and confined her serious outdoor work to two or three weeks in the whole year. And yet she lamented her poor composition!

On the other hand, the student who painted Fig. 2 made dozens of pencil scribbles for trial composition during her stay with me, walking round and round a subject, viewing it from every point of view (and how often have I heard artists offering the advice to young students not to rush at a sketch too hastily, but to try it from all points).

For a simple but very practical "sketch finder," cut an ordinary post-card with an oblong-shaped hole corresponding to shape of your canvas. Mark divisions, halves, and quarters on the edges of the opening. By holding this opening up to Nature, you find it serves as a peep-hole through which the subject is viewed; and when you have decided how you wish your main masses and lines to come, proceed to reproduce these proportions on your canvas, noting how they come according to the marks in your opening.

So much for the placing and design of your sketch; now let me hark back to the matter of ground colour you are sketching on (remember I am dealing with the oil medium). Artists will tell you that they try all

sorts of coloured and toned grounds. Throughout twenty years' practice of oil sketching, I think I have experimented on all kinds of grounds, white, yellow, medium dark and very dark brown. But I think experience teaches that the best average ground is found in a medium chocolate brown; or, perhaps, for light work, a pale buff.

Purchase some stout straw board, and cut it into sizes to fit your box; then with some foundation white and turps, and, say, burnt umber, with perhaps a touch of burnt sienna, prime the board with a fairly thick coat of paint. The advantages of this toned board I find to be the readiness with which you are able to block in the dark and light of a sketch, as the silhouette is so easily attainable by first painting in the sky pattern, leaving the ground simple. The illustration, Fig. 1, was painted exactly in this method.

Before commencing then to fully paint our sketch, let us run over the composition of our students' "palettes." We find all sorts of unnecessary colours, and at first it is quite a nuisance to the teacher who sits down to mix a tint to find all sorts of colour, but never the right one. So let us have some uniformity in the matter, and state what is generally accepted as a most useful landscape "palette"—flake white, chrome pale, chrome deep, yellow ochre, light red, cobalt, French ultramarine, transparent oxide of chromium, burnt umber, vermilion, rose madder, black (ivory).

You can do wonders with these twelve colours, if only you know how. Take ivory black. "Oh no!" said a water colour friend of mine when replenishing his box; "I shan't buy black. *There's no black in Nature!*" "Very well," said I, and we went our ways, and painted our morning sketch of trees and a windy, cloudy sky. "That's good," says he; "I like your sky." I couldn't help smiling as I said, "Do you? It's mostly painted with black, white, with a touch of yellow ochre."

It converted him, and he soon bought a pan of ivory black.

For all kinds of grays it is a most useful help; but let me tell the student in oils to use it *very sparingly*, and not in the dark parts. For some years during my early pupilage I was never allowed to have it on my palette; and though the "ban" was rather drastic, I can quite understand that my teacher felt that I might get too fond of it, and so spoil my sense of colour. But with great caution the landscape student will find it a most useful colour. Now just another hint with regard to the mode of mixing colour tints. The memory of the method I am advocating takes me back to very early "monochrome" painting days, and I recall the first methods then in vogue in schools of art dealing with what I believe were known as Sir E. Poynter's methods of monochrome painting. The chief thing I recall is the use of the palette knife in carefully mixing and matching the approximate tints for the various

Fig. 2.—By Greta Delleany.

Fig. 3.—By Ethel Francis.

parts—light, half-tone, and shade; and I can offer the landscape (or for that matter the life painting or still life) student no better advice than to apply this well-worn method to general colour practice. Study well your colour scheme, taking, for instance, Fig. 1 as an illustration. You will note large masses of general colour—the gray of the large cloud, lighter tones of the sky, the tint for the corn, and darks for the trees. Now mix a good supply of each of these colours as nearly as possible to Nature, so that you have, before commencing to paint, your palette covered with the necessary quantity of colour with which to proceed to work. A most enlightening conversation with a Royal Academician (who shall be nameless) some months back confirmed in my mind the value of this method of mixing tints with palette knife preparatory to working. Asked how he painted a delightful little sketch in one of the London exhibitions, he stated that he first mixed his general tints of colour with palette knife (mentioning the habit of a well-known deceased Academician, whose palette with the colours displayed in this manner is now kept in the private collection of the Royal Academy), and then proceeded to paint the whole thing in *one sitting*, using turps as a medium all through. When I reflected on the eminence of the artist who used this simple method, it certainly gave me much encouragement in "hammering in" this habit with all painting students. The great advantage I find is that instead of continually mixing "little patches" of colour at every brush load, one has large quantities of each general tint ready on the palette. Fancy, again, in painting a large cloud as in Fig. 1, how very useful to have the whole general colour ready at hand without mixing each little bit.

The general principles I have touched on will give my reader something of an idea of my lessons while on my "sketching rounds." But I must not conclude my second paper without a word or two on the habit of *direct* painting. Effects are so fleeting that Nature seems never twice alike; and so the student must get into the habit of seizing hold, as it were, of the tone and colour at one attempt (or must at least aim at this). Correct relative tones mean half the battle if students would only strive more at the study of them. Call your darkest dark 10 in value, and so up the scale, till your lightest light is 1, and keep to these gradations.

Watch the edges of your trees, dragging the sky colour round them, and try to feel that there is a huge dome of sky light reflected down on the tree mass, imparting a lot of its colour to it.

Figs. 1 and 4 are shown as examples of the direct method of oil sketching, and were each completed *at one sitting* of about two and a half hours, using the selection of colours I have noted. They offer quite a contrast in effects—the one a tranquil gray evening, the other a very stormy morning, during which I well remember my easel and picture being blown over more than once. The sketch shown in Fig. 3 is quite a successful rendering of a farmyard "bit" on a sunny morning, and shows a good appreciation of the relative tones under such effects.

## HONOURS PAGE.

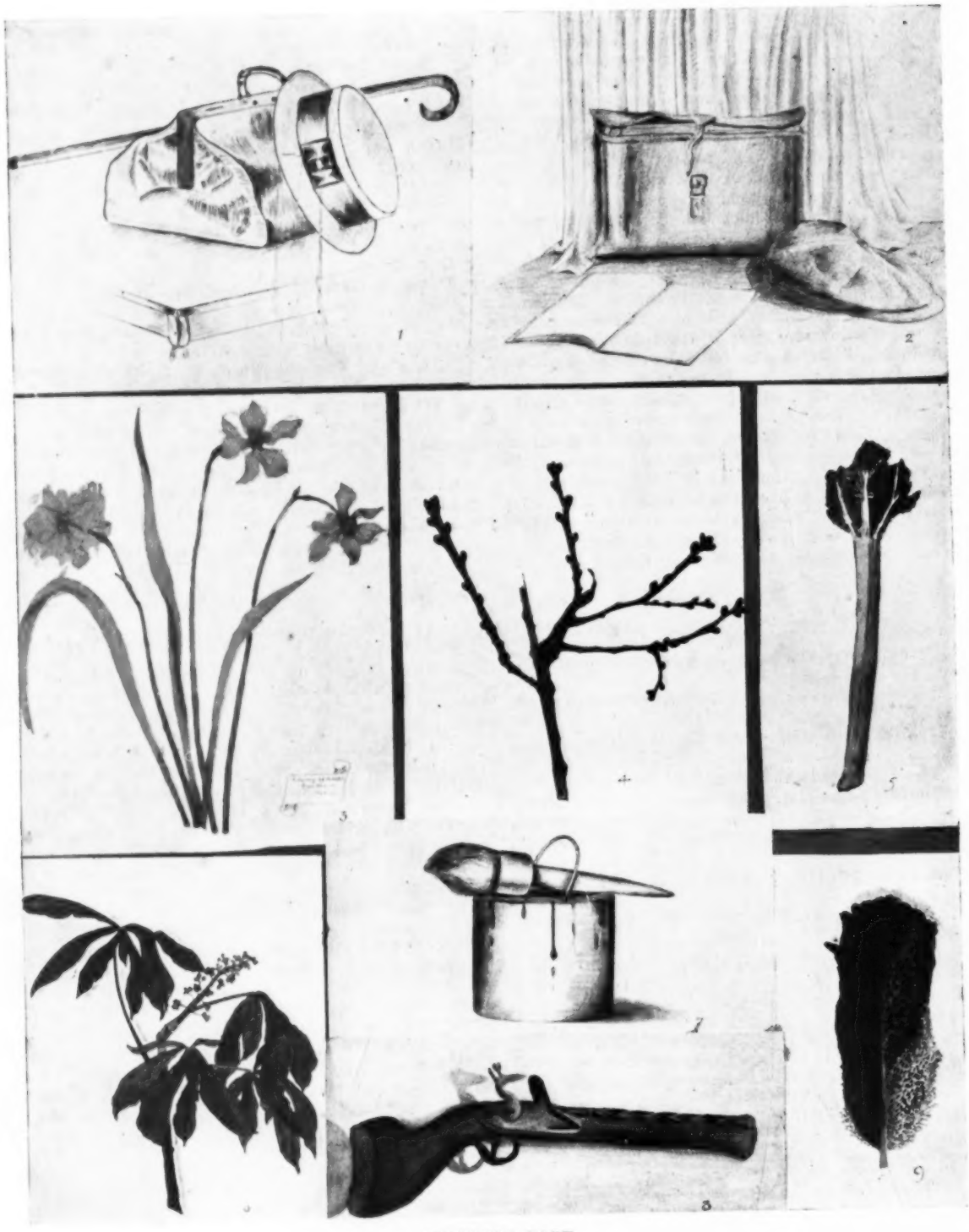
THE final prize awards in connection with this page go to—

1. Robert Mashiter (14), Sulyard Street Council School, Lancaster.
2. James Miller (13), Garnetbank Public School, Glasgow.
3. Lily Bell (13), Benfieldside Girls' School, Durham.
4. Herbert Stock (12), Congregational School, Finchingfield, Braintree.
5. Harry Binns (10), Boothtown Council School, Halifax.
6. John Boyton (14), Clapham Road Council School, Bedford.
7. Frank Tilby (13), Royal Jubilee Boys' School, North Shields.
8. Robert J. Patterson (12), Boys' School, Bibside, Northumberland.
9. Elizabeth Bampton (12), Queenstown Girls' School, Swindon.

Drawings sent in by the following scholars are very highly commended by the judges—

Phyllis M. Bevan (12), Roundhay Roman Catholic School, Leeds; Beatrice A. Penny (13), Roundhay Roman Catholic School, Leeds; Bella Lishman (12), Benfieldside Girls' School, Durham; Ethel Osborne (12), Benfieldside Girls' School, Durham; Nanie Gibson (13), Benfieldside Girls' School, Durham; Leslie W. Betts (14), Congregational School, Finchingfield, Essex; Constance I. Coe (10), Congregational School, Finchingfield, Essex; John Lowdon (11), Grammar School, Ayr; Alfred Phillips (13), Enderby Council School; G. Goddard (7), Enderby Council School; Harry Horne (13), Esplanade School, Harwich; Edward Scorgie (12), Cumnock Public School; Charles Ansell (12), Wroxall Council School, Isle of Wight; John Carr (13), New Herrington School, Fence Houses, Durham; Kate M'Evoy (12), St. Charles School, Aigburth Road, Liverpool; Edward M'Grath (14), St. Charles School, Aigburth Road, Liverpool; Joseph Maine (13), St Charles School, Aigburth Road, Liverpool; Hubert Brown (13), Sudley Road Council School, Aigburth Road, Liverpool; Francis Wilkinson (7), West Hill Council School; Ethel Burden (12), Rainbow Hill Council School, Worcester; Edna Bedford (12), Rainbow Council School, Worcester; Harly Burrow (14), Girls' National School, Ely; Thomas Perry (10), Newport (Mon.) Maindee Council School; Cecil Colley (9), Newport (Mon.) Maindee Council School; Charles Bray (9), Newport (Mon.) Maindee Council School; Walter Escott (9), Newport (Mon.) Maindee Council School; Walter E. Bennett (13), St. John's Hospital School, Exeter; Sydney A. Cole (13), St. John's Hospital School, Exeter; William G. Burt (11), Bebside, Northumberland; Harold Dearnley (13), Parish Church School, Dewsbury; Albert Scott (13), Parish Church School, Dewsbury; Sydney Oxley (13), Parish Church School, Dewsbury.

These awards complete all we have in hand at the time of going to press (June 6th). We cannot leave this page without expressing gratification at the improvement of the work sent in. For the last few months not only has the quantity increased, but the quality of the work has decidedly advanced. If these are representative even of the best work in our Primary Schools, then a good solid foundation is being laid.



HONOURS PAGE.

# ART AND THE BOOK.

## THE INVENTION OF LINE-ENGRAVING.

BY W. E. SPARKES.

GUTENBERG is said to have first printed in 1454. Curiously enough, another invention, afterwards closely connected with books, dates from the same time—to be quite accurate, from 1452. For in that year a goldsmith in Florence was struck with the notion that what he and many other goldsmiths had been in the habit of doing in the way of business might be used in another form as a pleasant pastime.

We must never forget that Florence was at that time the home of all the arts, of which engraving on metal was not the least. Gold and silver were decorated in a multitude of ways. But one of the most simple and yet most delightful manner was to cut out an outline picture on metal with graving tools. Imagine the engraver-artist with his polished silver plate before him. He sketches a subject lightly on the surface, and then cuts the lines into the plate, brushing away the thin silver threads that curl up before his sharp graving tool.

Now the engraving is complete, but the bright light glistening from the silver makes it difficult to see what the subject is; you must turn the plate this way and that, or put it in the shadow, before you can see the artist's work clearly.

What more natural than that the engraver should look about for some means to make his design clear in all lights? As a matter of fact, he found that it was possible to fill the lines in a very satisfactory manner. He took lead, silver, and copper, melted them together with a little borax to make them run easily, and then he poured this black liquid over the plate, where of course it ran down into the lines which he had cut with his graver, and which made the design or picture.

While still fluid, this black liquid was rubbed off the surface of the plate; that part of it which had flowed down into the grooves cut in the silver of course remained there untouched by the cloth, which was rubbed over the plate to get rid of the black liquid. In a short time it cooled, and the engraver had the satisfaction of seeing his carefully cut design standing out in thin black lines on the silver plate.

Now all this had become a common process long before Gutenberg had made his first types. How did the two arts—the art of engraving and of printing—come together?

Let me quote from an old book, printed in 1747, the story which had been handed down from old times, and which is accepted to-day as true. It is a little book with a sounding title—a book for the pocket, though it flourishes as *Sculptura-Historico-Technica*, with a further long description in the title-page to the effect that herein is to be found the history of engraving, and so forth.

"Maso Finegueria" (says our author), "an ingenious Goldsmith and Sculptor of Florence, having designed and ingraved his Figures, he used, before he inlayed them, to fill the Ingraving with Earth, and cast melted Sulphur on it, which gave it a Sort of Olive Colour; after which, pressing a Piece of damp Paper on it, with a smooth wooden Roller, the Ingraving on the Metal remained imprinted on the Paper, just as if it had been designed by a Pen."

In fact, without knowing it, Maso Finegueria was printing the *first line-engravings* in the history of the world. For there had been other ways employed by the goldsmiths for testing whether their engravings on silver were satisfactory. Sometimes they squeezed wax into the engraved lines, and then examined this "squeeze" to see whether all the lines were perfect; sometimes sulphur-moulds were used. But Finegueria had hit on an easier mode; he had merely to fill the lines with some dark substance, such as earth and sulphur mixed, and then, by pressing damp paper over the lines, to get a reversed picture of his engraving on the metal.

And this is precisely what is done to-day, and has been done for centuries, by printers of line-engravings. From this tiny source has run that great stream of wonderful engravings in which are embodied the finest art-works of the world; for line-engraving is precisely a repetition of Maso Finegueria's practice. The engraver cuts the lines into the metal; the printer squeezes a fat ink into these lines; he clears off all the surplus ink from the plate; and lastly, he presses damp paper heavily over the metal, and so obtains his proof.

Maso Finegueria was not long in seeing that he had struck a happy vein. The artistic world of Florence was eager for any new thing, and one can understand the pleasure with which the engraver would hand round these rough proofs from his engraved plates; yet, strangely enough, the art advanced very little either in Florence or any other Italian city. Finegueria's first proofs were treasured (some still exist); but for many years the Italians were content to see the invention develop in the hands of foreigners.

No doubt when the German printers found their way to Florence they saw the possibilities of the newly discovered art of engraving, for it was not long before (in 1466) we find line-engraving beginning to flourish in Germany, reaching at last the highest point in Albert Dürer's marvellous work. Yet by degrees (and chiefly by reason of the German engravings which found their way to Italy) the Italians took up the art, and in their hands it leapt forward by bounds, until such names as Mantegna and Marcantonio became world-famous.

"MOTHER AND CHILD," BY ANDREA MANTEGNA, PAINTER-ENGRAVER, 1431.

There are some names, such as Michael Angelo, Raphael, Rembrandt, which instantly call up pictures in the mind; we remember the massive strength of one, the grace and dignity of another, the play of light in the third. The mere name takes on a force and a compelling power by reason of the man's works; and with the natural process of mind acting towards naming and labelling for swift reference, a "Raphael" or a "Rembrandt" calls up a particular type of picture.

So with Andrea Mantegna. Any one who has once seen a series of reproductions after this great artist feels at once how they differ from the rich grandeur

of Michael Angelo, or the soft grace of Raphael, and how they fill a niche of their own. Yet there is a common racial likeness; without Mantegna, the others would hardly have been what they were.

Perhaps it would be better to take an example of his work to show, if possible, a few of the beauties that make the name of Mantegna honoured wherever art is appreciated. This exquisite "Mother and Child" will serve as well as another. At the first glance, one would see that here we have to deal with a fine engraver, with one who knew well how to manage his tools. There is nothing hesitating, nothing hurried. With calm assurance he proceeds towards his end; every line in the figure, every small fold in the drapery, has its place, and is put down with certainty.

In the next place, we see at once that the engraver is a superb artist; for every engraver of note must be gifted with a strong artistic sense, or he fails utterly. But in Mantegna we have a man working for himself, not translating other men's ideas, but engaged in original production; for many painters have had to rely upon

"Mother and Child."

others when they would have their works engraved by the public.

Mantegna was a painter first and foremost, and I believe he did not engrave more than twenty plates altogether (some authorities put the number as low as eleven); yet these engravings are so strong, so simple, and so satisfying in their handling that they alone would have made the reputation of a man. It is then as an artist, highly gifted and endowed with strong feeling, that we are to consider Mantegna. He lived in Padua at a time when classical learning and classical art had caught up the finest minds in Italy, and carried them forward in a passion of delight. It is perhaps impossible for us in these more prosaic days to imagine what a thrill ran through the learned and artistic society of Florence, for example, when a Greek statue was unearthed, or when a Latin poem was discovered where it had long lain hidden among the rubbish of some monastery. The artists, as well as the scholars, were then antiquarians; they fingered the ancient marble lovingly, they looked with such reverence upon these old statues that sculpture became almost a religion with them.

Indeed, it has been sometimes urged against Mantegna that his paintings are paintings of sculpture; but with such an engraving as this "Mother and Child" before us, it is hard to see how one can accuse the artist of merely delighting in cold and rigid *form*. The intensity of feeling shown in the action of the mother; the trouble in her face, as though she foresees grief to her child in the future, and would shield him; the happy peacefulness and perfect natural bearing of the child, could only be projected in a work of art by a man who was himself much more than an admirer of form or a lover of carved marble.

Of course he studied the antique intensely. That can be seen in the hands of the figures, in the small, broken-up, and complicated "Greek" drapery; and in many of his paintings the figures at first glance remind one of the carved *bas-reliefs* of which both Greek and Roman sculptors were so fond; yet, when one "gets behind" this severity in movement, one sees that here is a man of deep and sincere feeling.

I suppose the poets are by nature the best guides in this respect. They have to do with stubborn form, and they know how hard it is to subdue this form to express what they feel strongly; and so, I suppose, they can sympathise with, and therefore understand better, the struggles of men working in other arts. So Goethe seems to hit the exact position when he says of Mantegna that he studied the antique to get beautiful form, but went to Nature for life. "The study of the antique supplies form; Nature gives movement and the last touch of life."

At first sight one would say the "Mother and Child" is an engraving of a sculptured group; then when one looks at it more closely, at the expression of the faces and hands (there is an expression in hands that great artists never omit) one comes round to the point that this has the least in the world to do with sculpture, and most of all with life.

It would be interesting to speak more fully of Mantegna's works, but space forbids. Londoners, however, may see one of his finest at Hampton Court Palace, a series called the "Triumph of Julius Cæsar." A series eighty feet long and nine feet high, painted on fine linen, crowded with figures—soldiers, captives, and lastly, the Cæsar himself—an ordered stately procession, reminding one instantly of a sculptured bas-relief. Yet when one looks more closely this notion disappears. There are so many human touches, such as where the child among the captives clings to the old woman, who bends to lift him, or where the coarse buffoons make game of the prisoners.

Mantegna was the friend of princes and Popes; they offered him large gifts to beautify their palaces or churches with wall-paintings; he was a scholar and the friend of scholars; and his works were the well to which Michael Angelo and Raphael alike went in their early days. Mantegna's drawing is superb; it is so strong, so direct, and tells so much in a simple way. He never slighted a line (look at the drapery in the "Mother and Child"); he drew landscape with minute care; he knew how to represent all the passions—rage, despair, contempt, pity, love—he was moved particularly by the beauty of children.

It may be added that he finished the "Triumph of Cæsar" in 1492; that Charles I. bought the series; that it was sold by the Parliament, and bought by Cromwell; that Charles II. on his restoration placed it in Hampton Court, where it still remains.

## "Poetry," Engraved by Marcantonio Raimondi, after Raphael.

Half a century after Mantegna had first begun to engrave and paint, another Italian, born in Bologna, found himself at Rome, and under the protection of the generous painter, Raphael. The art of engraving had moved forward rapidly during those fifty years, just as the art of painting had advanced; for not only had Mantegna and his followers set the fashion of engraving, but from Germany and Flanders engravings came to Italy in great numbers. The young artist from Bologna was Marcantonio Raimondi; and though he was apprenticed to a goldsmith (a trade that called for an artistic training in those days), he appears soon to have been captured by the beauties of line-engraving. He tells us how one day when walking in Venice before St. Mark's Church, and idly looking in the shop windows, he saw for the first time some engravings by that greatest of all German artists, Albert Dürer; and how he was so smitten with their extreme delicacy and masterly craftsmanship that he emptied his pockets of his money to purchase some, leaving himself penniless, but happy in the possession of these treasures.

He first tried his hand at copying these; and so successful was he that the great Raphael (the friend and admirer of Dürer) got to hear of the young craftsman, and invited him to Rome. For artists have always seen their indebtedness to engravers; their *paintings* can only be known to a few, while the copies of their paintings may be known in engravings to thousands.

It seems strange that in Rome, where the books at the beginning of the sixteenth century, during Raphael's days, were illustrated by woodcuts, there should have been such a small appreciation of engraving on metal—in other words, for line-engraving. But it was so. The young Marcantonio set to work to engrave Raphael's paintings, and we are told that his skill and the beauty of his handling "stupefied Rome;" and henceforth, while Raphael lived, Marcantonio was constantly engaged in putting the master's works before the public. These engravings were eagerly bought up; they were copied more or less badly in all countries. It is chiefly by reason of them that Raphael's paintings are better known than perhaps those of any other great artist, with the exception of Rembrandt's; and *he*, it must be remembered, etched copies of his own paintings.

Marcantonio, in fact, engraved no less than seventy plates after Raphael's paintings or drawings. There have always been engravers who exactly suited a certain painter, one who seemed to see eye to eye with the artist. Sir Joshua Reynolds exclaimed that he would himself become immortal through his engraver, John Raphael Smith; John Constable found David Lucas fit his style like a glove; and no one could have translated Raphael more faithfully or with a truer accord than Marcantonio Raimondi.

"Poetry."

Apart from his craftsmanship, he drew in a manner exactly suited to the grace and dignity of line—the soft and flowing drapery, which Raphael had made his own. He had so far entered into the spirit of the artist that, where we are able to compare the original drawing with the engraving made from it, we are astonished to find how much the engraver has added, and yet how closely it is in sympathy with Raphael's style.

For a great engraver is not a mechanical copyist. He

steeps himself in the spirit and intention of the artist—he must do that if he is faithful—but he has his own way of expressing that spirit and that intention. It may well be that by copying exactly line by line he would miss the very essential point of the picture, but that by varying the lines according to his skill in craftsmanship, he maintains the life, but shows it in another form. That is why all fine engravings have a merit of their own, quite apart from the fact that they are copied from well-known paintings; that is why "steel engravings," with their hard, unfeeling, mechanical lines, have gone out of favour among artistic people, who would rather have a small "David Lucas" than acres of "steel engravings" after Landseer and the rest.

In other words, the engraver must bring us something of his own if he is to be worth anything. He must understand his artist; but he must, in a sense, see what is proper to be done in a new material, and what additional beauties may be brought by a new method.

Often enough Marcantonio had only a few outlines drawn by the pen and a few washes with the brush as the basis upon which he was to work. I mean that Raphael was so highly honoured, his drawings were so eagerly bought, that the designs he drew in broad lines for his large cartoons were considered of marvellous worth (as, of course, they were), and all lovers of art were eager to obtain copies, as they could not acquire the original drawing.

With such meagre material before him, Marcantonio turned out elaborate engravings with finished lines; with drapery in which there were fine drawing and skilful play of light and shade. He added drawing of parts where there was only suggestion, and he did this with such freedom, and such an absence of that "metallic" feeling so common in engravings, that the artistic world was delighted.

As to craftsmanship, compare him with Mantegna. The one is austere, strong, and careless to the soft graces and delicate half lights so dear to the other. Mantegna gets his effects of shade by carrying a "rain of lines" from right to left downwards, as you may see in the background of the "Mother and Child," as well as in the shades of the drapery everywhere. Marcantonio, on the other hand, carries his lines sweeping round every projection, varying them infinitely to express roundness and solidity, or breaking them into smaller lines, or even into dots, where he wishes to express the light tones on flesh. Mantegna is like a cold, unimpassioned Greek working in the cold light of thought. Marcantonio has the warmer temperament of the Italian, and softens and adorns the form. The two engravings are in their own spheres, and they will appeal to different minds in different ways according to natural likings or bent; but they are both admirable in their craftsmanship and as revelations of the artistic spirit.

### Conclusion.

Though for many years after the printed book had been introduced into all the countries of Europe, wood-engravings were commonly used for the illustrations, these gave way more and more to line-engravings, such as the two shown above. As I have pointed out before, line-engravings cannot be inked and printed with the type as wood-engravings could, so that it was necessary to print them separately—a much more expensive process, yet one thought to be justified by results; for the artist could, by this method of reproduction, obtain the finest and most delicate lines. Yet it must be allowed that this was at the expense of strength and vigour. For two hundred years wood-engraving sank in public favour, until the art was almost lost.

If space allowed, it would be pleasant to point out how, towards the close of the eighteenth century, an English engraver, William Bewick, revived the art, and brought it to perfection by cutting his designs on the *end* of the wood—that is to say, across the grain—by which means it is possible to cut much finer and clearer lines.

From that time until about 1870 there was a long line of fine artistic workmen, both in England and on the Continent; but with the discovery of "process" in Germany a speedy decay set in, because by the new methods it is possible to get quick and cheap reproductions, though the beautiful qualities of wood-engraving and line-engraving are lost. No longer is there a second mind at work translating the artist's thoughts, and adding something from itself. Yet at the same time it would be ungrateful not to acknowledge the many points in which good "processes" excel, for at any rate they give almost literal reproduction of the artist's lines, though not of his tones.

But though to trace these changes would be a pleasant task, fate "with her abhorred shears" steps in and cuts the thread. *Valete!*

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## HANDWORK FOR JUNIORS.

BY H. WAY, INSTRUCTOR SCARBOROUGH SUMMER SCHOOL.

### PAPER AND CARD WORK.—V.

As children become more familiar with the use of the ruler and set-square, their further relations should be utilised. So far, squares and rectangles have been mainly employed; by introducing various kinds of triangles a much wider field of construction is opened.

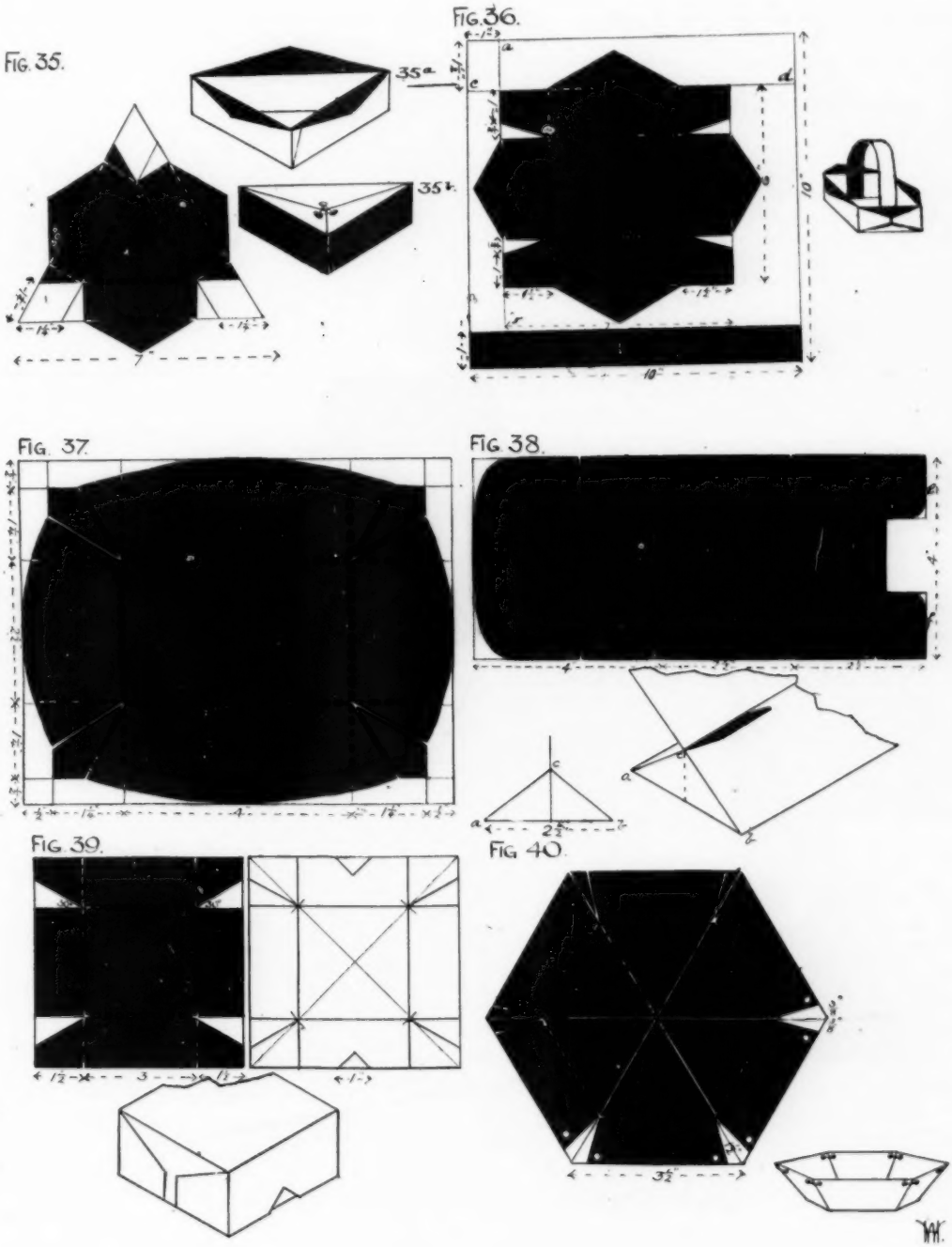
Right-angled triangles are met with in constructions of all kinds; the equilateral triangle is the base of the hexagon, and the isosceles triangle is frequently seen. At this stage it is not at all necessary to emphasise the names of these figures; our object is mainly manipulation of ordinary drawing instruments; at the same time the careful teacher will lead his pupils along the lines of observation, so that each step employed may have a reasonable explanation.

Simple geometric truths may be established by experiment—not geometric facts that the pupil will be required to know in ten years' time, but simple points which he can make use of now. For example, in Fig. 38, the pen-rest, an isosceles triangle is needed in the figure—its properties are employed.

More curved work may be introduced, but there is a definite limit to the shapes owing to the limitations

of the material and tools used; suggestions of curves are made in Figs. 37, 38, and 42. Allow the pupils to experiment in drawing and cutting curves for themselves, and they will soon appreciate the extent to bottle, and they must be cut in such a way that the pen does not fall out.

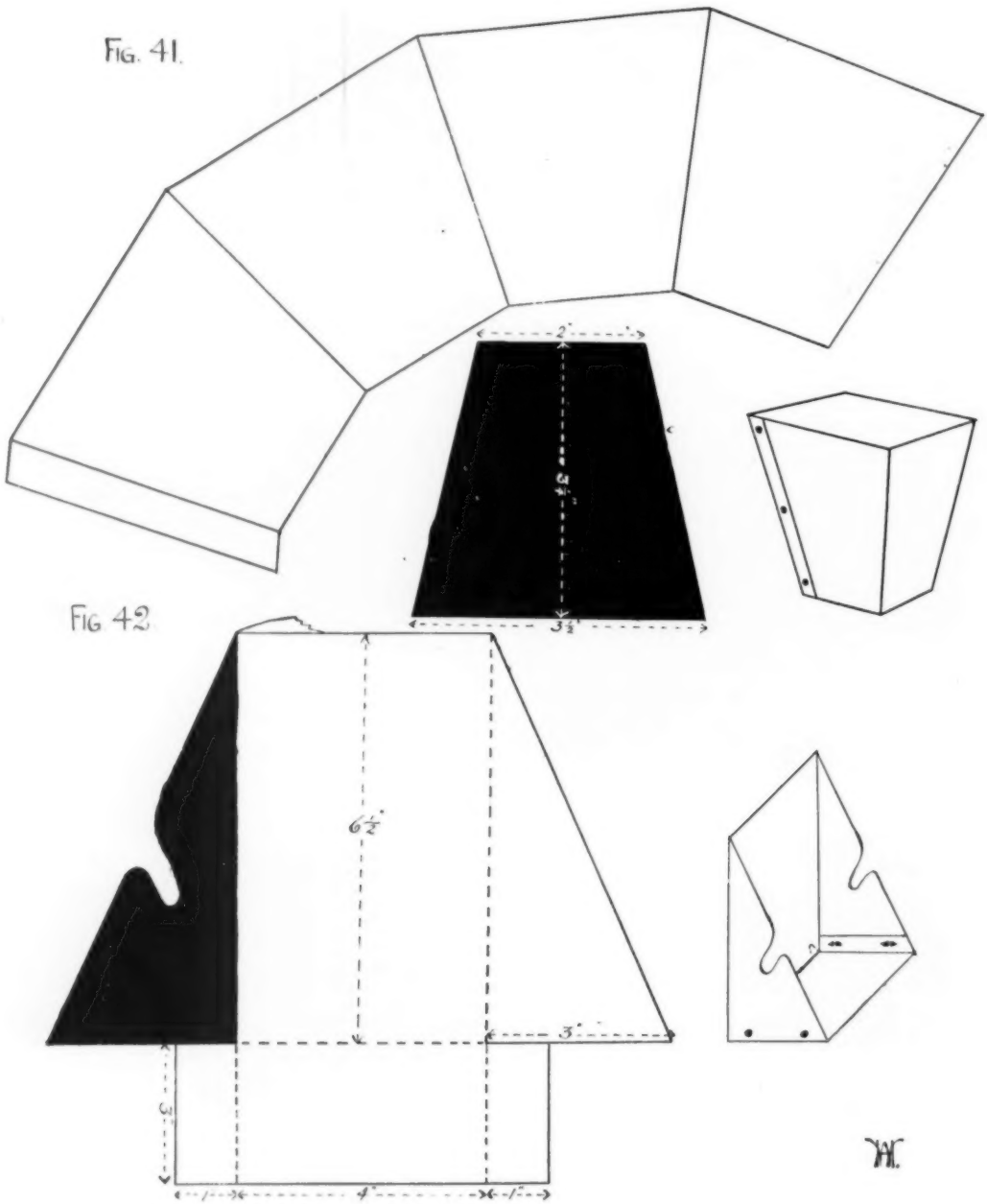
Every opportunity should be given for the pupils to find out solutions of difficulties for themselves; they




which curves may be employed. Simple illustrations of using decorative forms advantageously are now appearing, as in Fig. 42. The pen rests in the spaces cut out, but these must be high enough to clear the can then discover ways of doing things, more valuable at this stage than discovering things. Moreover, it is the teacher's duty to guide and protect; he should place difficulty after difficulty before his pupils; give

opportunities of surmounting these; step in now and then to save his pupils from physical or mental torture. Show them how to do things when they have tried, and do not let them lose heart by constant failure in attempting too much. Just as it is idiotic to place a sharp chisel before a child without warning of its danger and instruction for its avoidance, so it is equally stupid to expect a child to devise always from his inner consciousness such simple forms that his mental appreciation is not injured.

A word of warning is necessary as to the objects constructed: do not allow things to be made which are utterly unsuited to the material; recognise the limits of the material, and you are leading your pupils to reason why other materials are employed.




### PRACTICAL WORK.

Fig. 35. Triangular tray from an equilateral triangle. Material, 8″ square of thin tinted cardboard. Draw line 7″ long, 1″ from edge of card. At ends of line

draw line making 60° with first line; make this line 7″ long, and join ends of lines. Mark points 1¼″ from ends of lines (see diagram), and draw lines parallel to the sides of the triangle. At the points where these lines cross, draw lines at right angles. Where the lines at right angles meet the outer lines of the figure, draw lines at 30° to the lines. Mark out the figure for cutting, fold and fix together either by fasteners or adhesive; the triangular pieces *a*, *b*, *c* may be folded outwards as in 35*a*, or inwards as in 35*b*, string being passed through holes bored to make fastening. Note, the lines to be folded are shown by dotted lines.

Fig. 36. Sweet-basket with handle, based on a square. Material, 10″ square of thin tinted card. If the class be small, let the children examine a model, and upon sheets of drawing paper supplied endeavour to make a rough working drawing. To see if these drawings fulfil the necessary conditions, the figures may be cut out and placed together: thus the children will see if their plans are suitable. If the class be too large to admit this method of procedure, place a model before the class and examine its construction; by careful questioning a working drawing may be built up and drawn by each child. A model which can be laid out flat may now be placed on the card to be used to show the best method of using the material at disposal. Next, proceed to draw the development, as in Fig. 36. Draw the lines *ab*, *cd* first; then draw the figure, and complete as shown. Cut out and fix with fasteners, or adhesive.

Fig. 37. A tray with curved sides. Material, rectangle of thin tinted card 6″ by 7½″. Measure and mark out as in diagram. Draw patterns for the curved sides on paper, and use as template on card. Cut out along outside lines, and cut along the plain white line to the angles. Crease and fold along the dot-and-dash lines, fasten flaps on shorter sides *outside*, trim with scissors.

Fig. 38. A pen-rest. Material, rectangle of thin tinted card 9″ by 4″. Measure and mark off as in diagram. Draw curves. To find distances *a'c'* and *b'c'*, draw a line 2½″ long. At the middle of the line draw a line at right angles; mark off 1″, and join ends *ac*, *bc*. With strip of paper measure these distances, and mark off on drawing. Cut out the figure, and cut the 1¼″ slits shown by plain white line. Crease and fold on the dotted lines, and pass ends *ef* through the slits.

Fig. 39. Box for paper coins, with lid. Material, two 6″ squares of thin tinted card. Measure and mark off the first square, crease deeply the folding lines with a pencil, fold with creased line *inside*, fasten the box flaps *inside*. Now draw the diagonals of the remaining square, place the box just made on the square with corners of base on the diagonals, mark the points of the corners on the diagonals as in diagram, join the points, and complete the drawing. Cut out, crease the folding lines with pencil, fold with creased lines *outside* and flaps *outside*. This object forms the lid, and will just fit over the box.

Fig. 40. Use of the 60° set-square in constructing a hexagon. This plain figure of a hexagon may be constructed and cut from thin coloured paper, the diagonals drawn and partly cut; thus a hexagonal windmill may be made, or a simple six-sided tray may be developed. Material, an 8″ square of thin tinted card. Draw the base 3½″; at each end construct an angle of 60°, using ruler and set-square. Make these lines 3½″ long, draw the diameter, at each end make angles of 60°, make the lines 3½″ long, and join ends. Next draw the diagonals, mark points 1¼″ from each angle on the diagonals, join these points to produce the inner hexagon. Mark points ⅜″, as shown in diagram; draw the lines forming the V shapes. These may be cut out, and the model made up and fastened, as in the small drawing; or the V shapes may be left in only, cutting down one line, and bending the card on the dotted lines, thus making flaps to fix outside by adhesive or fasteners. Some trimming of these flaps will be needed.

Fig. 41. Cover for flower-pot, making a template for many equal-sided object. Material, thin tinted card 12″ by 8″. Construct the figure blackened, draw the base 3½″, mark the middle of this line, draw a line at right angles, mark off 3¼″, at the end draw a line parallel to the base, and mark off 1″ on each side. Cut out this figure, and, beginning from the right of the card, as in the diagram, place the figure in the card, draw round it, place the figure against the one just produced, draw round it, and so on. At the left side proceed as though to draw a fifth figure, but only portions of the parallel lines need be drawn; make these half an inch long, join, and cut out. Fasten with fasteners, as shown. If suitable selection of tint has been made, the object forms a most suitable specimen for decoration by brush-work.

Fig. 42. An ink-bottle stand and pen rest, based on the right-angled triangle. Material, thin tinted card 8″ by 8″. Construct the right-lined figure first, then construct a right-angled triangle in drawing-paper the same size as the blackened triangle, from the middle of the base draw a line at right angles to meet the sloping side. From the point of contact draw the line to the angle, and then draw a curve, as in the figure; cut out, and use this paper pattern as a template for the curves on the card. Cut out carefully, and fix together as shown.

## SIMPLE OR LIGHT WOODWORK.

BY ROBERT FF. WOOTTON, HON. SEC., EDUCATIONAL HANDWORK ASSOCIATION (LONDON BRANCH), AND AUTHOR OF "SIMPLE WOODWORK FOR JUNIOR CLASSES."

### 2. Equipment and Tools, and their Cost.

CONSIDERING the large and increasing demands now being made upon local exchequers, it would be futile in the extreme to advocate the introduction of any new form of school work, or extension of an old form (no matter how valuable) where such introduction involved a heavy initial outlay in equipment and tools, or would prove expensive in its upkeep.

Besides, a large and expensive equipment and set of tools do not necessarily mean a valuable one from an educational point of view, and may not only hinder their purchase, but defeat the very ends you may have in view. Select all that is necessary, but the simpler

and fewer the articles to be obtained the better your prospect of getting them, and the mastery over them is more easily acquired and more thorough.

In addition, the time when the mechanical operations can be relegated to the automatic, subconscious centres of control is sooner reached, and the brain is then left free to devote its whole attention to the problems connected with the work itself. These are sufficiently engrossing without being complicated by difficulties arising from the tool manipulations.

Here is a list of the equipment and tools I advise and use, arranged in a manner suitable for reference, and accompanied by a photograph, showing clearly, I hope, the kind of tools recommended as the most suitable for the work in question.

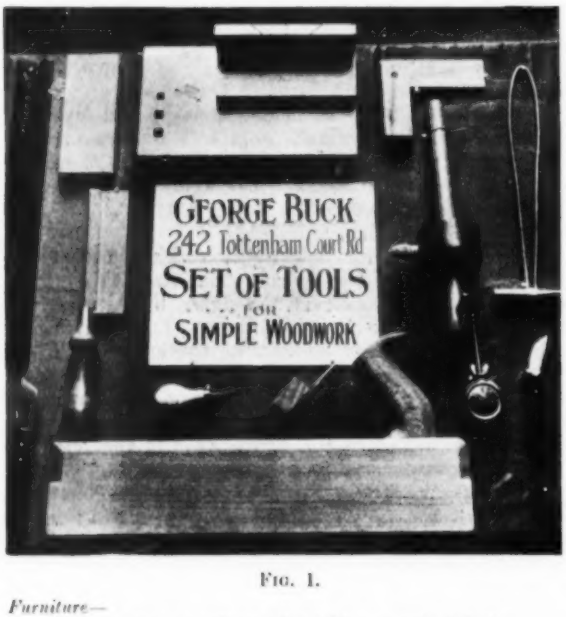



FIG. 1.

*Furniture—*

1. Kindergarten or ordinary flat tables, or school desks.
2. Easel and "squared" blackboard.

| *Teacher's Tools—* | s. | d. |
|---|---|---|
| 1. Jack plane, 14 in. long, ... ... ... ... | 4 | 6 |
| 2. Hook-handled knife, ... ... ... ... | 1 | 0 |
| 3. 4 in. oilstone and oilcan, ... ... ... | 1 | 6 |
| Total, ... ... ... ... ... | 7 | 0 |

| *Tools for Forty Children—* | £ | s. | d. |
|---|---|---|---|
| 1. Wooden rules and lead pencils. | | | |
| 2. Cardboard knives, 40 at 6d. each, ... | 1 | 0 | 0 |
| 3. Steel straight-edges, 12 in. long, 40 at 1s., ... | 2 | 0 | 0 |
| 4. Millboards, 12 in. by 9 in., 40 at 1½d., ... | 0 | 5 | 0 |
| 5. Small hammers, 40 at 3d., ... ... ... | 0 | 10 | 0 |
| 6. Sawing-boards, 20 at 1s. 2d., ... ... | 1 | 3 | 4 |
| 7. Fine bradawls, 20 at 1½d., ... ... ... | 0 | 2 | 6 |
| 8. Small fancy saws, 20 at 1s., ... ... | 1 | 0 | 0 |
| 9. Beech try-squares, 20 at 3d., ... ... | 0 | 5 | 0 |
| Total, ... ... ... ... | £6 | 5 | 10 |

Initial cost thus being £6, 5s. 10d. ÷ 40, or 3s. 2d. per child.

It will be noticed that the knives, straight-edges, and millboards are used for cardboard modelling, and also that, with the exception of the sawing-board, all these tools are readily obtainable, and none have been admitted to the list which would have to be discarded later.

The jack-plane and the hook-handled knife may be dispensed with during the first year; and in place of the steel straight-edge I have on one or two occasions used strips of American white-wood or beech, measuring 12″ × 3″ × ¼″. But whereas the steel straight-edges are for practical purposes indestructible, the wooden ones frequently require re-trueing or replacing.

The sawing-board is merely a combination of an ordinary bench-hook or sawing-board and a common mitre block, with three holes added for holding various sized rods during nailing. If used with tables it is hooked against the near edge of such table, but if used with ordinary school desks I have found it advisable to push it up against the far ledge whilst using.

In place of an oilstone it is possible to substitute a piece of school slate, as in Sweden; but a fine Washita or India oilstone is in every way preferable.

One set of tools will be sufficient for all the classes in a school, with a judicious arrangement of the time-table. And respecting their upkeep: Millboards will require renewing every year, bradawls probably every second year, and sawing-boards every fifth or sixth year. Saws will need a yearly sharpening, and knives should be attended to by the teacher frequently; but the other items of the equipment are practically indestructible, or can be relied upon to last at the least twenty years.

Woodwork in the classroom, and taught by the class teacher! What an outcry was raised three years ago at this proposal, especially by those who had only a nodding acquaintance with our teachers. But it captured the attention of both head teachers and assistants; and they have proved again, as they did in the case of school drill, that they are able and willing to resume their rightful position in this kind of work—captains on their own quarter-deck. Of course, a room set apart for art, handwork, and kindred subjects is in many ways desirable, but it is not absolutely essential; meanwhile the classroom is there, and can and should be used for the purpose.

I am indebted to Mr. Alf. Thompson, headmaster of the Birchanger Road Schools, South Norwood, for the accompanying photographs of children at work in ordinary school desks, and also the group of models; and to Mr. Irving, the class master, for his kindness in photographing them. Mr. Thompson writes to me that they are "Standard V. boys at work. They are sitting down at the request of the photographer (Mr. Irving of our staff); of course they work in any position they like. The boys in Standards VII., VI., and part of V. go to the manual centre, and do the usual woodwork. I hope shortly to take the strip work a standard lower. We find the work has much improved the boys' knowledge of arithmetic and mensuration."

Mr. Fred Gale, the instructor of the class, has kindly added the following notes:—

"*Tools used.*—Tenon saw, bradawl, knife, hammer. To avoid marking the surface of the desk, a cutting-board is used. This board has been specially designed and protected by Mr. Colby, head of the Manual Training Department for Croydon.

"*General Method.*—Boys make a rough sketch from the teacher's model, and dimension it. They then make full-sized working drawings, calculate the amount of material required, prepare wood, mark off on wood, allowing for waste in cutting, etc. Problems in arithmetic and mensuration based on the models are worked from the drawings.

"The photographs show a group of models constructed by the boys of Standard V. during the first year.

"Every fifth exercise is a product of the boy's own

FIG. 2.

thought; the double signal shown in the group is an example.

"One photograph shows boys at work on the model of the dressing-table."

The fifth photograph shows children at work in a secondary school, and was taken by the courtesy of Miss I. Jameson, M.A., the principal. And lastly, a photograph from Miss Hodgson of The Croft School, Fleet, Hampshire, by kind permission of *The Country Home*. Miss Hodgson writes me a most flattering letter, of which I dare quote only some sentences: "One of my boys made signal, platform, barrows, etc., for his railway. He is just now doing wood-carving, but he began to use tools entirely through your valuable little book."

FIG. 3.

### 3. MATERIALS USED, AND THEIR COST.

Dealing with these in the same manner as with the equipment and tools, the following quantities have been found ample for a class of forty children for one year, *working one full half-day per week*. If a shorter time only be available, the quantities may be lessened proportionately.

| | £ | s. | d. |
|---|---|---|---|
| (*a*) *From Ironmonger*— | | | |
| 1. Fine wire nails ("fine pins"), 2 lbs. of 1 in. at 1s. 6d., ... ... ... ... ... | 0 | 3 | 0 |
| 2. Fine wire nails ("fine pins"), ½ lb. of ¾ in. at 1s. 6d., ... ... ... ... ... | 0 | 0 | 9 |
| 3. Fine wire nails ("fine pins"), ¼ lb. of ½ in. at 1s., ... ... ... ... ... | 0 | 0 | 3 |
| 4. Fine wire nails ("fine pins"), ¼ lb. of ¾ in. at 1s., ... ... ... ... ... ... | 0 | 0 | 3 |
| 5. No. 1½ fine glasspaper, 1½ quires at 8d., ... | 0 | 1 | 0 |
| (*b*) *From Timber Merchant*— | | | |
| 1. Lime fretwood, 70 sq. ft. of $\frac{1}{8}$ in. at 1¾d., | 0 | 10 | 2½ |
| 2. Lime fretwood, 30 sq. ft. of ¼ in. at 1¾d., | 0 | 4 | 4½ |
| 3. Whitewood fretwood, 30 sq. ft. of ¼ in. at 2½d., ... ... ... ... ... | 0 | 6 | 3 |
| 4. Whitewood fretwood, sawing ¼ in. stuff into rods at 6d. per 100 ft., ... ... | 0 | 4 | 6 |
| 5. Satin walnut fretwood, 30 sq. ft. at 2d., ... | 0 | 5 | 0 |
| 6. Dowel rods, 2 of ¾ in. and 3 of ½ in., ... | 0 | 0 | 7 |
| Total, ... ... ... ... | £1 | 16 | 2 |

This works out at a cost of under 11d. per child per year.

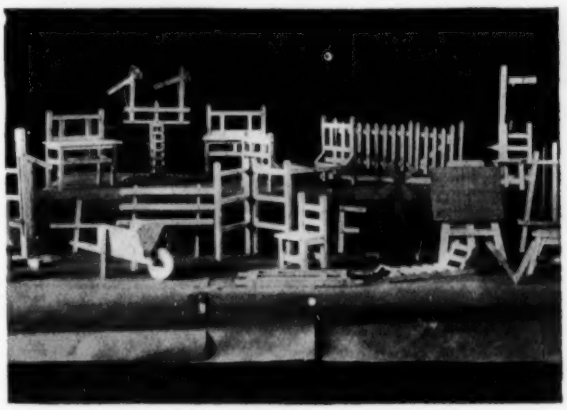


FIG. 4.

"Taking into consideration the fact that other school work is in abeyance during the handwork lesson, it is doubtful if there be any increased outlay on the school as a whole." As I mentioned earlier, a decrease in the time allotted to handwork implies a corresponding decrease in the cost of the materials. Probably teachers will commence with one hour per week for this subject, and wait for time and experience to prove conclusively that an extension is justifiable in the interests of the children and of the other subjects of the curriculum.

Canary whitewood (erroneously termed basswood in some parts of England) can be used instead of lime, but the latter cuts "sweeter" and nails better, whilst the cost is the same.

After the first year a cutting-gauge at a cost of 9d. may with advantage be added to the stock of tools, and in conjunction with plane and sawing-board be used for stripping the ¼″ wood into ¼″ × ¼″ rods, and so eliminate the item of 4s. 6d. Boys of ten and eleven years of age will do this readily after a little practice.

Where rigid economy must be practised, common fir or pine fretwood, or even thin picture backing, could be used; and children can readily be induced

Fig. 5.

to augment the stock by such thin wood as cigar- or sweet-boxes, and in country districts much use can be made of willows and osiers. Where the pupils are *very* young or weak in the wrists, it would be well to substitute thin cardboard for the $\frac{1}{16}''$ wood, and to cut it with scissors — in other words, adopt materials to suit the circumstances and the environment.

Fig. 6.

It cannot be too often impressed upon teachers that only the finest of nails are suitable. They should be about one-half the gauge of the finest panel pins; otherwise the splitting of the wood will be a source of continual annoyance. For starting the very finest nails, it has been found advantageous to use an ordinary household pin as a bradawl.

For the prices of wood in the list of materials I am indebted to Messrs. Latham of 124 Curtain Road, E.C., and also for their willingness to supply small quantities. In ordering wood it is well to mention only the number of square feet required, without specifying any particular width. All timbers are sold in definite trade widths, and to order any particular size entails extra cutting and enhanced prices. Besides, it is possible to order sizes, especially widths, impossible to obtain until Nature alters her present methods of growing trees. I am told by timber merchants that ladies are the more guilty in this respect; possibly they are mistaken.

# THE HISTORY LESSON AND DRAWING.

## THE GEORGIAN PERIOD.—II.

BY W. H. ELGAR.

NO qualification is more valuable to a head teacher than a *sense of proportion*, and at present no other is so urgently needed. New subjects, or new phases of old subjects, are ever pressing for recognition, and in many of the larger schools the subject teacher is in evidence with a rather exalted idea of the importance of his particular work. Every new development has to be weighed, and probably modified considerably, if at all suitable, before adoption in any particular school.

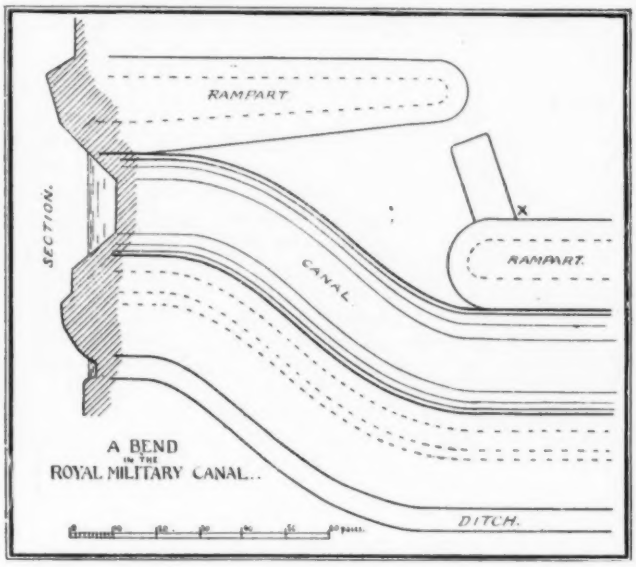
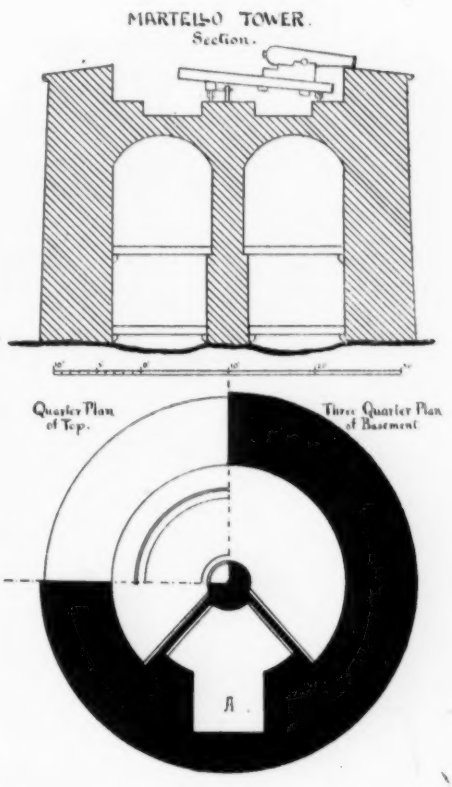



FIG. 1.




FIGS. 3, 4.

Now that the head teacher is held *directly* responsible for efficient work in every part of the school, this *sense of proportion* must be of a very real character.

Those who have followed these papers will know how difficult it has sometimes been to keep within the bounds—to preserve such sense of proportion—with such a series, in work like this, the idea is to get a record of the object; not to draw for the sake of making an attractive drawing, but for the sake of the object; and the most reliable and suitable methods should be employed.

Sometimes these records have to be made by a privileged few for the sake not only of themselves, but for

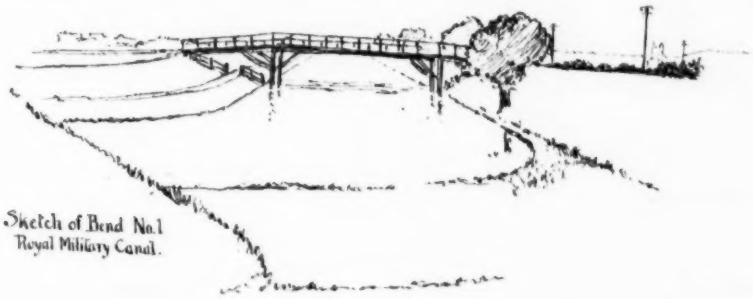



FIG. 2.

which is comparatively narrow in idea, although wide in time and place, and of absorbing human interest. The neglect of this human interest is perhaps the most serious defect of modern education.

Various methods *of taking records* have been employed, and it cannot be too often insisted upon that that of their less fortunate colleagues who are left in school. Then, of course, the most complete and easily understood methods must be employed.

Of such character are our illustrations of the Royal Military Canal, which cuts off that fifth quarter of the globe (according to Thomas Ingoldsby) from the

rest—namely, Romney Marsh. This, together with the Martello towers and other larger forts, formed part of the defences constructed in the time of Napoleon's threatened invasion of England.

Roughly speaking, this canal skirts the foot of the hills, zigzagging round their irregularities in a way that is shown in Figs. 1 and 2. The rough plan was obtained by observation and pacing, after the manner described

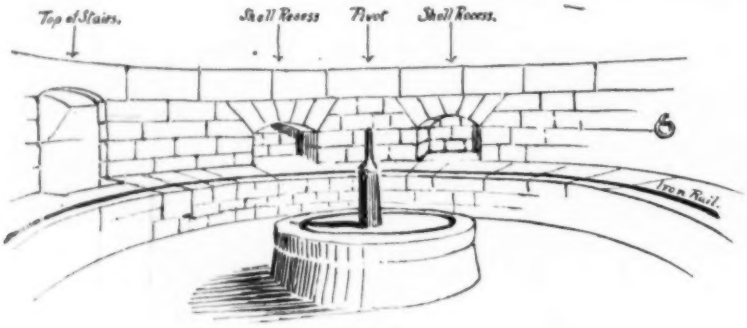



FIG. 5.

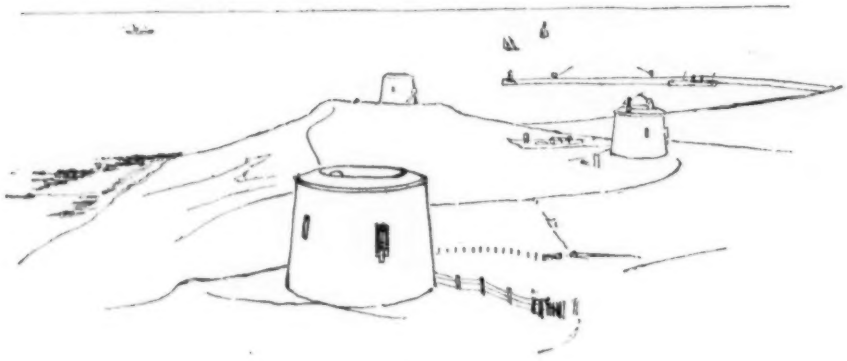


FIG. 6.

FIG. 7.

in our notes on architecture. The bridge, which appears in the sketch (Fig. 2), afforded means of measuring the width as well as the depth of the water, and the cross on the plan marks the position from which the sketch was made. Artillery, if placed here, could have poured a raking fire upon any attempting to cross the canal. These bends occur at rather irregular intervals, which average about three to the mile.

Martello towers extend in an almost unbroken line from a point to the east of Folkestone in Kent, to Seaford in Sussex, being placed so closely as to enable their single guns to assist one another at point-blank range. They were constructed of brick; their walls averaged 8 feet in thickness; their roofs were vaulted on to a central column, and their tops formed platforms for traversing guns, which moved, together with their carriages, round a central iron pivot (Figs. 3 and 4). When the gun was fired, it and its carriage slid up the sloping ways, thus taking up the recoil, and bringing the muzzle inside the parapet, making reloading convenient.

A sketch of the top of a dismantled tower is Fig. 5, where the pivot, the iron rails for the wheels of the carriage, and the recesses in the parapet for the shells, can all be plainly seen. In Fig. 4 the magazine is marked A, the remainder of the basement being for stores.

The first floor, to which access was obtained by a small door, afforded accommodation for the garrison, who had to content themselves with two very small

windows and one fireplace, while a narrow stair contrived in the wall where it was extra thick enabled the roof to be reached. A slight general sketch of the tower known as No. 1 forms Fig. 6, in which Nos. 2 and 3 can be seen in the distance.

FIG. 8.

FIG. 10.

These somewhat full descriptions and sketches are given in the hope that they may be interesting to those who have not the opportunity of seeing these important features, and as suggestions as to the kind of work that might be expected from school excursions.

Many museums contain old uniforms, swords, and other

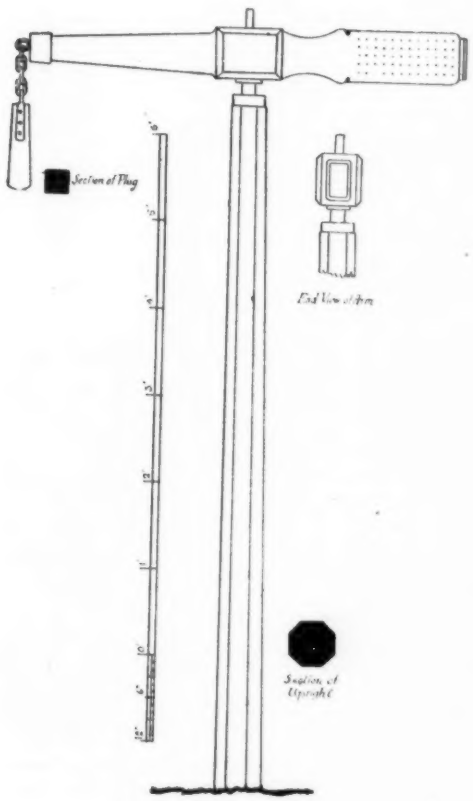



FIG. 9.

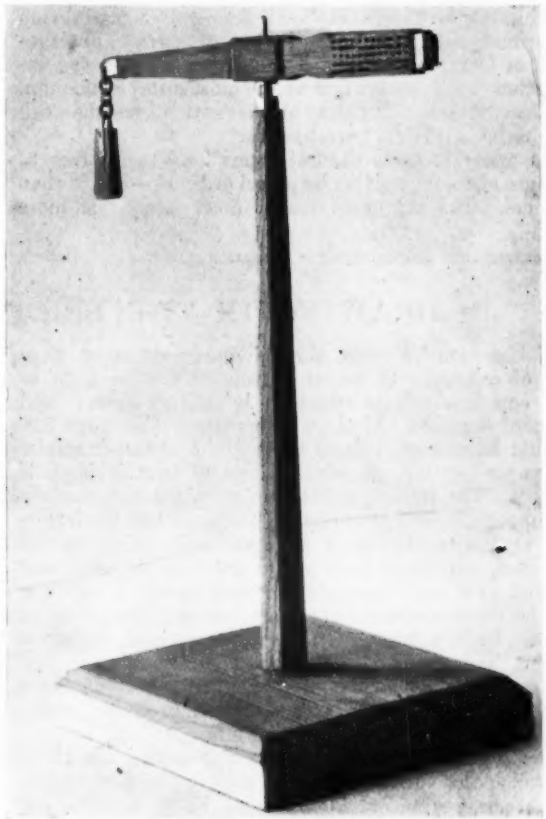


FIG. 11.

relics, which would help to make the history of this stirring period live, and discretion combined with enthusiasm will soon find suitable material for children's work.

No greater contrast exists between the Georgian times and our own than in the means of communication. The stage coach, and in a lesser degree the post-chaise, are familiar to us through numerous coloured prints of the period. It is interesting to note the stereotyped stiffness of attitude of the horses in the earlier prints, and to compare them with the modern photographs of animals in motion. Here is a model of a postillion's boot (Fig. 7), made from the two sketches which form Fig. 8. These sketches were taken from a boot in a museum case, consequently the boot was not weighed; but the post-horses must have been tough to trot with such heavy articles at their sides. It is well to remember, however, that the postillion was exposed to the cold, and often had very substantial lining to his boots.

In fulfilment of a half-promise made more than a year ago, some particulars of the quintain at Offham, Kent, are included, consisting of a measured drawing (Fig. 9), a photograph (Fig. 10), and an illustration of a model made to the scale of 1 in. to 1 foot (Fig. 11). The plug of wood hanging from the long end of the swinging arm was generally replaced by a bag of sand or flour when the quintain was used. At the other end of the arm is the target, in this case pierced with sixty holes, forming lodging-places for the point of the lance.

In all probability no part of the original structure remains; but, as it has been renewed from time to time, what we now have most likely resembles very closely the apparatus actually used by our sporting forefathers. How much of interest would have been spared if the example of these Kentish people had been followed! A little doing is often worth more than a great deal of talking.

## SOME SUGGESTIONS FOR COLOUR STUDIES FOR JUNIOR CLASSES.

THE April issue contained a page similar to this, but showing the representation of familiar objects. In many cases a fairly accurate representation was there obtained by means of a certain amount of pencil shading, with a wash of colour added, the sole object being to get as near to a truthful rendering of the object, both in form and colour, as possible.

This is practically the be-all and end-all of drawing in primary schools—the cultivation of accurate observation of form, colour, and light and shade, and the expression of the observation by the most suitable medium. Such an outlook takes away all convention from the work and reduces it to its lowest terms.

In many respects natural forms lend themselves to the use of colour—either by pastel or brush—better than objects. The colour of fruits, flowers, etc., is more vivid, striking, and varied than in the case of objects. Such examples as those illustrated provide excellent examples for the use of the brush direct. The colour should not be a mere insipid wash, but should be as near to the hue of the specimen as possible, and should be applied with a good full brush. The accidental "modelling" due to the uneven running of the colour is a good point.

The pencil can often be used effectively—especially for markings and shadows, as shown in the egg and the knot of string. Such brushwork as shown on this page may with advantage, educationally, very largely supersede the excessive use of the typical "brush strokes." The latter have their uses technically, but do little to develop the powers of observation.

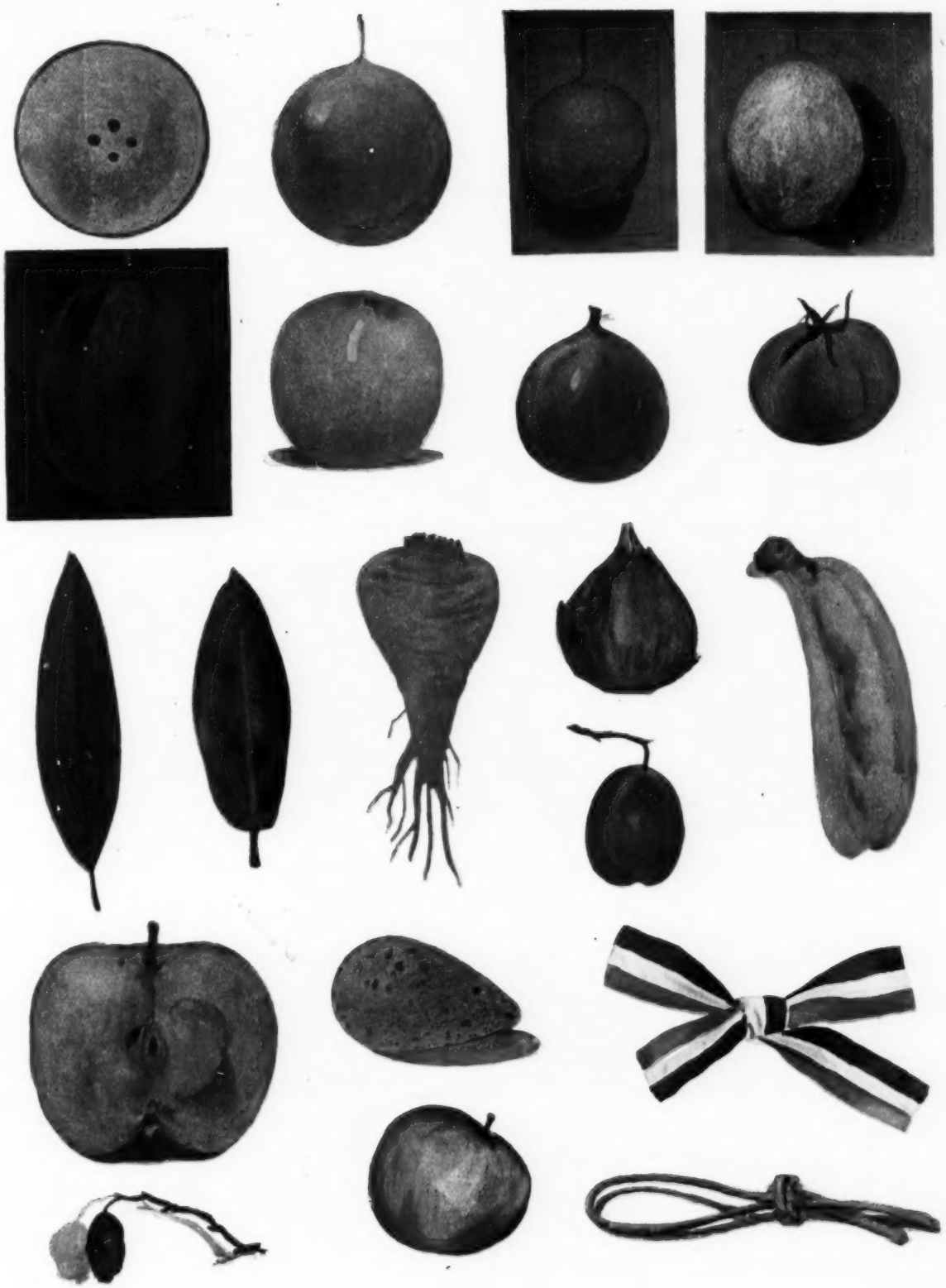
## DRAWING IN THE LEICESTER PRIMARY SCHOOLS.

IN last month's issue, through inadvertence, a page of examples of paper cutting was alluded to as the common objects executed by the children; and that of common objects was omitted. The page 829 should have been referred to as Fig. 1 of the examples in paper cutting, of which page 38 in this issue is Fig. 2. The subject refers to the indoor and outdoor occupations peculiar to Shrove Tuesday, and the lettering at the top is also a piece of free cutting by the children. Many of their games are thus depicted and pasted in a very decoratve manner on the woodwork in the classrooms, and these are renewed from time to time. In one school the inspector arrived during a lesson, and while he was talking to the mistress the children were given permission to cut what they pleased; one child interested in the situation produced a silhouette of the figures in front of him.

Some good exercises in this paper-cutting are those in which the whole class contribute to the final result, some combination of the exercises being arranged by the teacher. The bananas, drawn freely as brush exercises, show the best work of the class, grouped to form a bunch; and in the same way the sticks of rhubarb were made to form a bundle; the violets and primroses were also drawn and cut by the class, and all these were put together by the teacher; the same was done with the nasturtiums, which were copied simultaneously from different specimens by different children in the special class; and in the case of the bryony the children of four years old threaded the beads for the berries, while the leaves were the work of the children of six (Fig. 3).

At times this grouping is carried further. For instance, a market-stall, drawn by the teacher, is furnished with its various fruits by the class; or a donkey is provided with carrots. In this way the preparatory drawing arouses the interest of the class in the first place, and the children are eager to help in the completion of the picture.

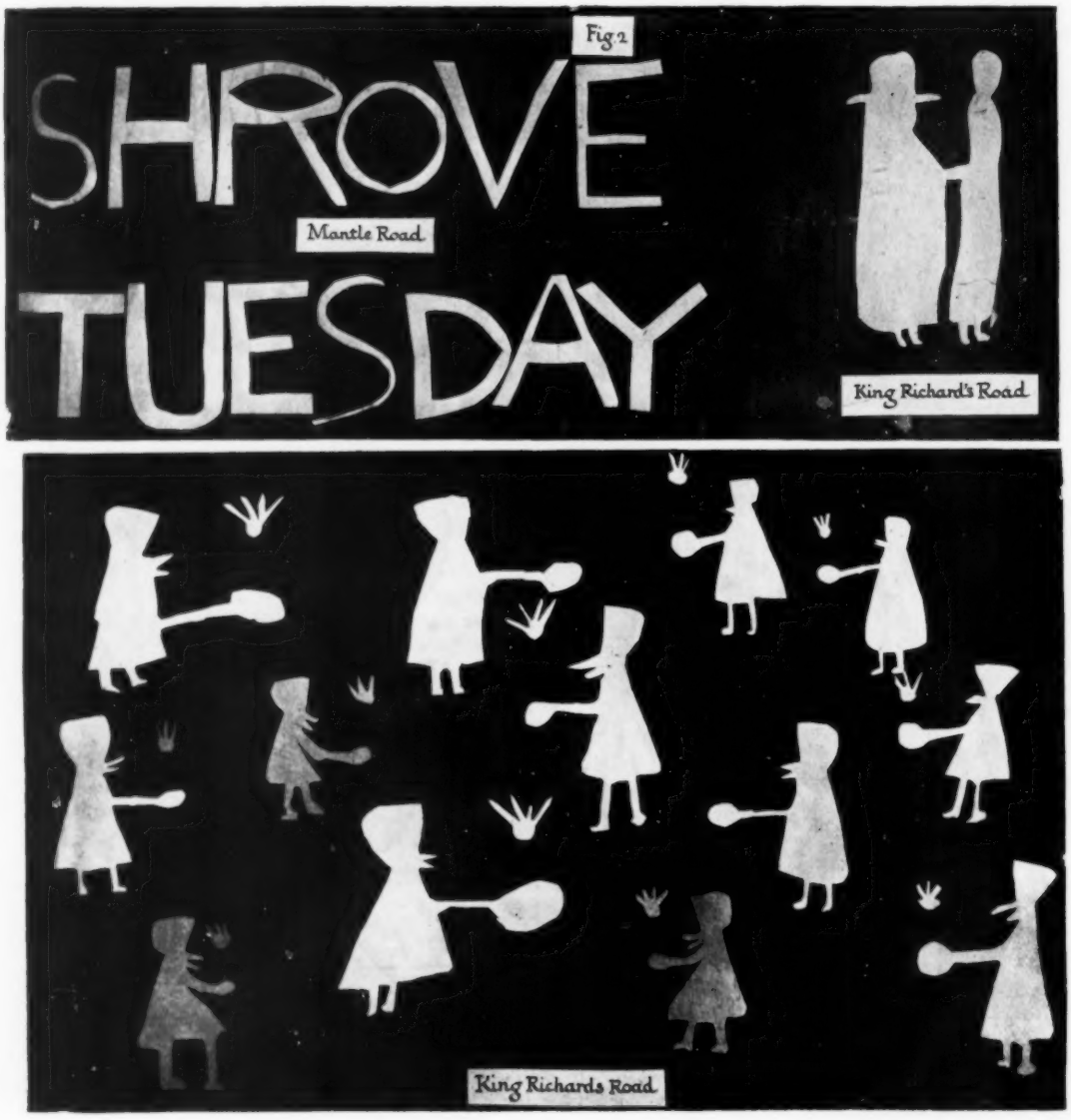
Illustrations of things the children have seen outside, and apart from the school life, form an important part of the work. They learn by this means to look and



SUGGESTIONS FOR COLOUR STUDIES FOR JUNIOR CLASSES.

remember for themselves, without any assistance from others; and from such drawings the teacher is able to judge somewhat of the individuality of the members of a class. Fig. 4 shows a merry-go-round and a shooting-gallery at a fair, and a newspaper boy. Fig. 5 gives some illustrations for stories; and while to the teacher the question, "Does the picture tell its story?" is of primary importance, much may be taught at the same time of the feeling for rightness of size which the children find so difficult to grasp. This difficulty is increased to some degree by uniformity of size in the paper. A child draws an apple, a vegetable marrow, a horse, a house, in each case fairly to fill the paper, and the result is an inevitable confusion in its mind as to relative sizes—a confusion which every teacher is compelled ceaselessly to guard against, and which has to be largely counteracted by careful and continued criticism.

In some buildings where the accommodation is limited, Standard I. is a part of the infant department, and the methods so largely used with the infants are to some extent continued during that year, and better work of the same kind results; but only that of the actual infant classes is here illustrated.




As a whole, the work done in this section tends to develop the personality of the children, and at this stage, when they are quite un-selfconscious and take a delight in expressing themselves, distinct originality is occasionally shown. It is much to be regretted that limitations of time and conditions prevent—or at any rate check—its development in the upper standards.

FIG. 3.

FIG. 4.

FIG. 5.

# Prizes for Younger Children.

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# A NEW COURSE OF PRACTICAL AND CONSTRUCTIVE WORK,

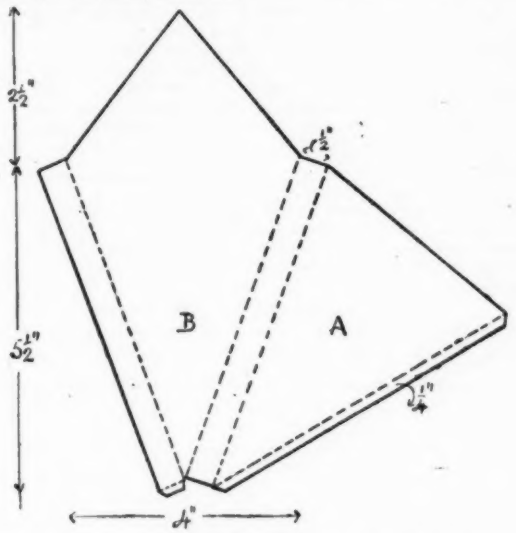
## ARISING OUT OF AND COMBINED WITH THE ORDINARY SCHOOL SUBJECTS.

*For Junior, Middle, and Upper Divisions of Primary Schools.*

BY A. R. PICKLES, M.A., AND DALTON GRANGE.

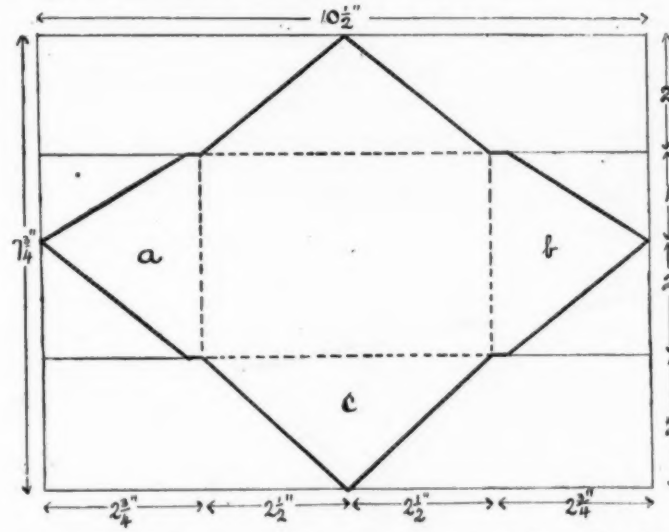
### Lesson 78.—Paper Modelling (*Continued*). A Tidy.

DRAW on stout paper. Cut out, folding along the dotted lines. Fix as shown. A and B are similar triangles. Questions on lines, areas, etc.




### Lesson 79.—Paper Modelling. The Envelope.

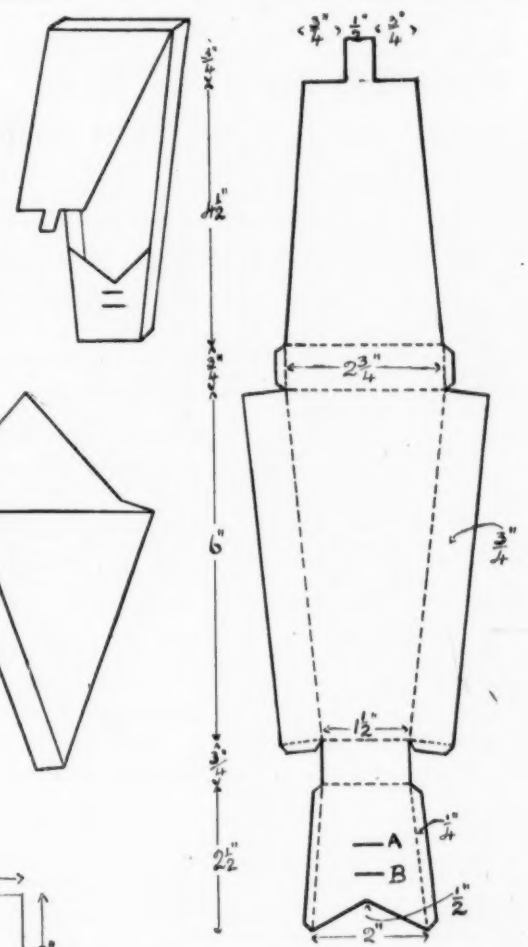
Draw as in diagram. Cut out along the thick lines, and fold along the dotted lines. When fixing, fold over (*a*) and (*b*), and




gum. Then fold over (*c*) and gum—(*d*) is not gummed, but simply folded over. Questions on areas, etc.

### Paper Modelling. A Scissors Case.

Draw as shown in the diagram. Cut out along the thick lines, then fold along the dotted lines. The two slits A and B are 1" and 1½" respectively from the bottom of the case—that is, from the dotted line above, in the diagram. They may be obtained by folding the paper so that the fold bisects the slits and is at right angles to them. The slits are each ¼" long. Fix as shown.




### Lesson 80.—Graphic Arithmetic. Revision Exercise.

1. A drill squad consists of 5 rows, 8 in a row. John is in the fourth row from the front and is the fifth from the right-hand end. His brother is in the front row, the second from the left-hand end. Fix the positions of all the boys by placing dots on squared paper. Use crosses to show the positions of John and his brother.

2. Plot out the following prices of cotton belting—

| Width. | 1", | 1¼", | 1½", | 1¾", | 2", | 2½". |
|---|---|---|---|---|---|---|
| Price per foot. | 3½d., | 4d., | 4½d., | 4¾d., | 5½d., | 5¾d. |

3. A gentleman in a railway carriage sees in front a windmill. The line joining the windmill to the train makes an angle of 60° with the railway line. Ten miles farther he looks back and notices that the angle is now 45°. Plot this out on squared paper, and find the shortest distance of the windmill from the railway, etc.

### For Fifth, Sixth, and Seventh Years of School Scheme.

In response to numerous requests, we gave the General Syllabus for the Senior Course in the November 1910 issue of the *Practical Teacher*. We reproduce it here, and give short outlines of the first six lessons.

Much interest has been taken in this Course, and teachers

welcome eagerly the reproduction and amplification of the series of lessons. Messrs. Schofield and Sims of Huddersfield, the well-known educational publishers, have already issued Books I., II., and III., and Book IV. will be out before the middle of July. We draw the attention of our readers to the notice of these books on page 60. Books V. and VI. will follow shortly. But it is strongly recommended that schools taking this work for the first time should not attempt anything beyond Book IV., and it is somewhat doubtful whether even this work could be done in the first year without previous preparation.

## GENERAL SYLLABUS FOR SENIOR DIVISION.

### COURSE III.

*UPPER CLASSES.*

The circle: radius, diameter, circumference, chord, segment, sector, area, designs.

Angles as sectors: construction of angles; protractor and its use.

Pyramid, square and triangular: volume of pyramid.

Hexagon and octagon.

Further exercises on the right-angled triangle.

Drawing of square half or double the *area* of a given square.

The cylinder and the cone.

Plan and elevation: exercises and illustrations.

Proportionate division of lines.

Concentric circles: borders; exercises in planning of spaces and in calculation of area, cost, etc.

Measuring and drawing to scale of objects based on the regular geometrical forms, and the calculation of problems thereon which have been devised by the pupils.

Symbolic expression: simple equations and problems leading to simple equations, use of brackets, simple factors.

Use of squared paper for calculations, graphs, etc., especially in construction of graphs showing such relationship as between inches and centimetres, yards and metres, lbs. and kilos., francs and shillings, etc.

Modelling in cardboard and paper, based on previous geometrical relationships and exercises: fender, cradle, square pyramid, triangular pyramid, hexagonal prism and pyramid, octagonal box and tray, salt-box, stable lantern, etc.

Calculations and problems—numbers and letters—based on all drawing and modelling exercises.

### Lesson 81.—The Circle: Its Circumference, Diameter, Radius.

See that each pupil has a piece of string and some cylindrical object; a jam jar will do. Pupils find approximately the ratio of the circumference to the diameter. Cut out of cardboard a circle 7 cm. diameter; roll it along a line until it has completed one revolution; measure distance along this line—that is, the circumference—and again compare. Repeat with wheel along the classroom floor. Introduce questions, as: If $d$ is the diameter, what is the circumference? Radius $= r$, write down the diameter.

Numerous exercises should now be given in the calculation of length of the circumference: diameters, 7 inches, 14 inches, 21 inches; radii, 3·5 inches, 4·2 inches. Given the circumference, to find the diameter. Dimensions should be given which will work out easily.

#### Practical Exercises.

(Connected with Science Apparatus.)

1. The diameter of an evaporating basin is 10 cm. 5 mm. What is the length of its curved edge?
2. Find the radius of a Bohemian glass beaker having a circumference of 24·2 cm.
3. What is the circumference of a thick Bohemian glass trough having a diameter of 9 inches?
4. A copper sand-bath has a circumference of 31½ inches. Find its diameter.
5. A circular filter paper has a diameter of 11.2 cms. It is folded into two equal parts. Find the distance round one of these parts.

*Note.*—When this lesson appears in Book V., examples connected with (1) simple objects, (2) machinery, etc. (3) the clock, (4) the farm will be given.

### Lesson 82.—The Circumference of the Circle.

#### Drawing Exercises.

1. Construct a rectangle 2·1 inches by 2·8 inches. Draw the diagonals, and describe a circle to pass through the four corners of the rectangle. Find the circumference of this circle.
2. Describe a square of 3·5-inch side. In it draw a circle which just touches the four sides. Find the difference between the circumference of this circle and the perimeter of the square.
3. A garden is in the form of a semicircle. The diameter is 70 yards. Draw this garden scale 1 mm. to 1 yard. Find the actual distance round the garden.
4. Draw a circle of 9 cm. diameter. In it draw two diameters at right angles. Join the ends of these diameters to form a square. What is the perimeter of the square?

*Note.*—Each side of the square should be measured.

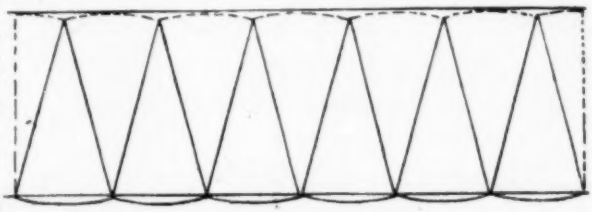
The pupils should now be taught how to construct a circle passing through the three corners of a triangle, and also how to inscribe a circle in a triangle. Many examples can be given here, dealing with the different kinds of triangles. When correcting, the teacher will find that the several answers vary slightly.

#### Practical Work.

Practical measurement in connection with the circumference of the circle can be provided easily. Reels, beakers, and other science apparatus, the hot-water pipes, fall-pipes, etc., can all be used, either in connection with a piece of thread or a tape-measure.

### Lesson 83.—The Area of the Circle.

On coloured paper describe a circle having a radius of 2·8 inches. Cut the circle into twelve sectors. Arrange as shown.

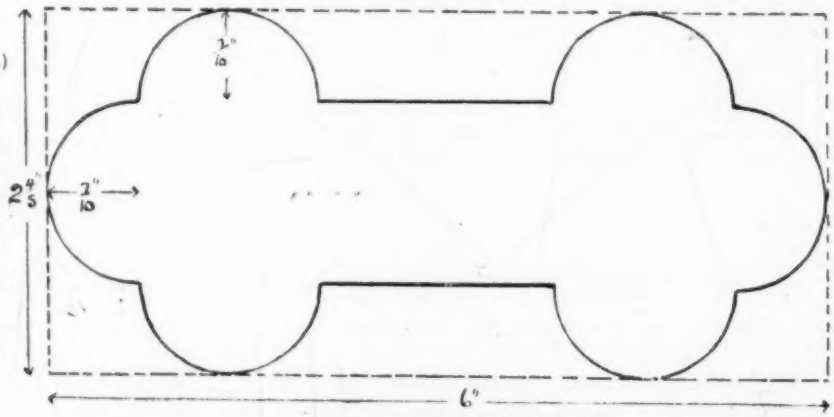


Question pupils. Area $= \frac{1}{2}$ circumference $\times$ radius
$= \frac{1}{2}(2\pi r) \times$ radius
$= \pi r \times r$
$= \pi r^2$.

Questions on areas will be given in Book V. similar to those on the circumference—that is, connected with (1) simple objects; (2) machinery; (3) the clock, etc.

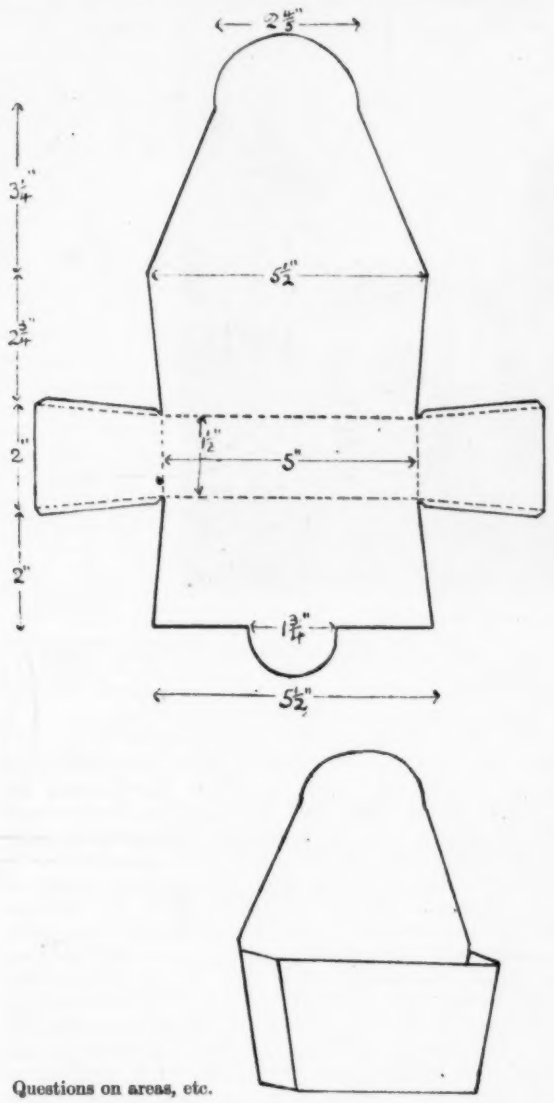
### Lesson 84.—The Circle: A Design.

1. Cut out of coloured paper the following. Fix the large piece in the drawing-book, and arrange the smaller pieces to form some original design.



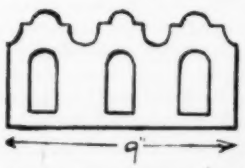

Questions on areas and perimeters.

LESSON 85.—CARDBOARD MODELLING: BRUSH-BOX.




Questions on areas, etc.

LESSON 86.—PRACTICAL PROBLEMS.




1. How many of these would be required to go round the edges of a garden 74 feet 6 inches by 94 feet 3 inches? What would they cost at 8s. 3d. per hundred?

2. Wire-netting is sold in rolls of 50 yards. What is the area of wire-netting in a roll if its width is 42 inches? If this roll costs 14s. 7d., what is the price of a square yard?

3. A room measures 15 feet 6 inches by 13 feet. It is carpeted with the exception of a border all the way round 1 foot 6 inches wide. Find—

(*a*) The area of the carpet.
(*b*) What it costs at 5s. 3d. per square yard.
(*c*) The area of the border.
(*d*) The cost of staining and polishing the border at 1½d. per square foot.

4. The ground floor of a store-room measures 80 feet by 19 feet. Calculate in square feet the area of this room. What would it cost to concrete this floor at 4½d. per square foot?

# THE TEACHING OF GEOGRAPHY FROM AN IMPERIAL POINT OF VIEW.

BY H. J. MACKINDER, M.P., READER IN GEOGRAPHY IN THE UNIVERSITY OF LONDON.

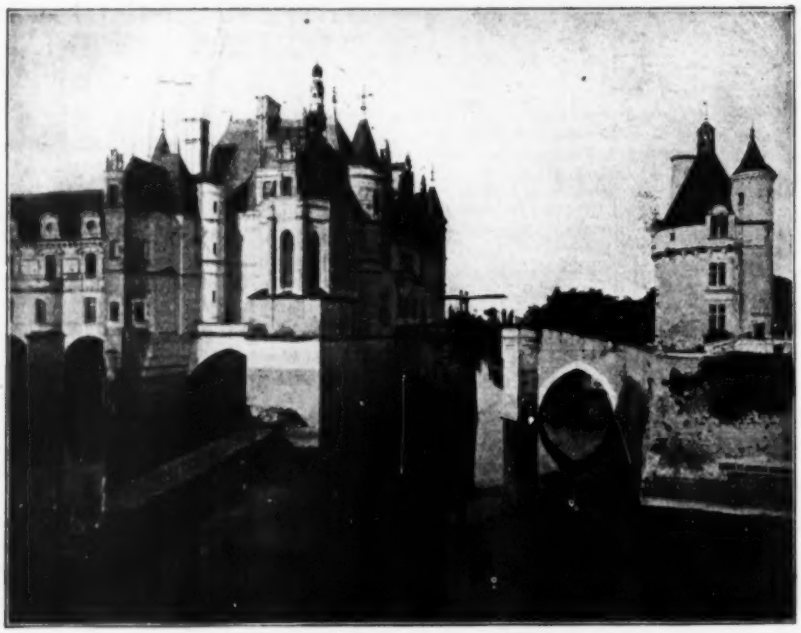
(*Continued from page 809.*)

THE imperial attitude enters when we come to consider the point of view from which our young citizens thus reconnoitre the world which is to be the scene of their life's action. Our task as teachers of the twentieth century, responsible for the next generation, is to secure that our pupils shall view the world not merely from the standpoints of England, Scotland, Ireland, Canada, Australia, New Zealand, South Africa, or India, but that they shall identify themselves with the British Empire, which is far more complex than its component parts, and therefore demands higher powers of visualisation. This very difficulty of imagination is, however, the measure of the importance and urgency of the task. The conquest of space by speed has in our time reduced the relative significance of near and easily apprehended things. Must we not readjust our educational methods to the new situation?

For reasons such as these it was that a departmental committee was in the autumn of 1902 appointed by the Secretary of State for the Colonies to consider on what system teaching in regard to the Empire might best be developed. I will conclude what I have to say by a few words descriptive of the work of this committee, although that work by no means covers the whole field which I have traversed this afternoon.

The Visual Instruction Committee of the Colonial Office began by reporting that children in any part of the Empire would never understand what the other parts were like unless by some adequate means of visual instruction, and further, that as far as possible the teaching should be on the same lines in all parts of the Empire. The committee were then empowered to take practical steps with a view to the realisation of their ideas. It was decided to make a beginning by an experiment on a small sale, and for this purpose to invite the three eastern colonies of Ceylon, the Straits Settlements, and Hong Kong to bear the expense of a small book of lantern lectures on the United Kingdom for use in the schools of those colonies. Further editions of these lectures have since been issued to suit the special requirements of other parts of the Empire, and at the present time the lectures on the United Kingdom are in use in Ceylon, the Straits Settlements, Hong Kong, Mauritius, Sierra Leone, the Gold Coast, Southern Nigeria, Trinidad, British Guiana, Jamaica, and in the following provinces of India: Madras, Bombay, Bengal, the United Provinces, the Punjab, Burma, Eastern Bengal and Assam, the Central Provinces, the North-West Frontier Province, and British Baluchistan. In short, system has been introduced throughout the tropical zone of the Empire.

Having thus completed an instalment of their task, the committee turned to a fresh aspect of their work, the preparation of illustrated lectures on the overseas dominions and India as well as on the United Kingdom. At this point, however, they were met by a difficulty. There are no doubt in the open market many excellent photographs and lantern slides available for illustrating the chief lands of the Empire, but they have usu-



THE CHATEAU OF CHENONCEAU, TOURAINE.

(One of the beautiful illustrations in Messrs, Thos. Cook & Sons' new vacation programme entitled *Summer Holidays*, which is reviewed on page 57.)

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ally been collected either without system by passing visitors whose main object was other than educational, or by residents who, from the very fact of their familiarity with the scenes, are apt to omit pictures of the contrasts which for the stranger are most salient. Such considerable collections as are available have usually been made for special purposes, as for the promotion of religious missions, or of emigration. Moreover, there are frequent difficulties of copyright. The experience of the committee therefore convinced them that if this part of the work were to be done as well as it could be done, it was advisable to have the illustrations prepared on a uniform system by an artist specially commissioned and instructed for the purpose. They were so fortunate as to interest in their work at this stage her Majesty the Queen, and through her powerful and gracious support, and that of Lady Dudley and a committee of ladies who were good enough to collect a considerable sum of money for the purpose, they have been able to make a beginning of a work which it will take some time to complete. The committee's artist, Mr. A. Hugh Fisher, has travelled through India, Canada, Australia, New Zealand, the Fiji Islands, Singapore, North Borneo, Hong Kong, Wei-hai-Wei, Somaliland, Cyprus, Malta, and Gibraltar, everywhere collecting material according to the directions of the committee for the purpose of constructing illustrative lantern slides. Eight lectures on India were issued last December, and to illustrate them a set of 480 slides. These may be obtained, a considerable proportion of them coloured, for the sum of £50, or uncoloured, except in the case of the maps, for the sum of £26.

In one respect the slides illustrative of the Indian lectures represent an important advance on those of the United Kingdom. They include more numerous maps of the land-relief, to which the pictures are related, so that the ideals which I have endeavoured here to sketch are more nearly attained. For the sake of accuracy in dealing with so vast a region the text of the lectures has been minutely revised by a number of our chief authorities on Indian subjects, but this has not been allowed to interfere with vividness in the interchaining of the maps and pictures, so that the challenge to visualisation might not be lost. At the present time three other similar courses of illustrated lectures are being prepared, respectively on Australasia, Canada, and the ring of imperial stations round Europe and Asia from Gibraltar to Wei-hai-Wei. It is intended that these shall be issued in the course of the present year. The hope of the committee is that educational authorities may take the scheme up, and supply schools with the illustrative material by a system of loan. Already the Scottish Provincial Committee, and the Army Council in respect of the Army Schools, have adopted this course.

One last point should perhaps be dealt with. There are now many methods of depicting scenes to the eye, among them, of course, the ubiquitous cinematograph. At present, at any rate, for the purposes of school teaching, unless under exceptional circumstances, the cinematograph appears too cumbrous and too expensive; but apart from these practical difficulties, I venture to plead for the simplicity of the lantern slide. Our object in visual instruction is not to render thought unnecessary, but rather to call forth the effort of imagination. Personally, I disbelieve in complex apparatus for teaching, wherever it can be avoided. The young child loves the battered doll, which amply serves

to focus the imagination. Similarly, I believe that the good teacher can make the blackboard and the lantern slide speak to better educative purpose than he could the cinematograph. The picture palaces of the present moment debauch the imagination by relieving the spectator of all effort. The picture painted by the artist is more stimulating than the photograph for the very reason that it suggests rather than reproduces. Visual instruction, it must be remembered, aims at increasing the mental powers in a particular direction, and for this purpose we must not render unnecessary effort of the mind. When the child gesticulates in reply to a question we may know that the mind's eye is at work. Does not the distant look in the more mature eye betoken a similar fact?

May I summarise the four points which I have endeavoured to make. They are:—

(1) That with the exception of the national epic, our teaching of history, essential for the citizens of a modern democracy, should for children be incidental to geography;

(2) That geography thus lifted to be the chief outlook subject in our school curriculum should be taught by methods which demand visualisation;

(3) That we should aim at educating the citizens of the many parts of the British Empire to sympathise with one another and to understand imperial problems by teaching geography visually, not only from the point of view of the homeland, but also of the Empire; and

(4) That among many other excellent aids to such teaching, there is now becoming available an apparatus of illustrated lectures prepared under the authority of the Visual Instruction Committee of the Colonial Office.

## TALES FOR THE STORY HOUR.

### THE ROSE OF PITY.

#### An Italian Fairy Tale.

BY MARIE BAYNE.

A MERCHANT trader lived once upon a time in Italy. Month by month his ships came laden with goods from far-off lands. Then they would sail away with cargoes of Italian merchandise—fruit and wine, and bales of rare silken cloth—and thus the master merchant grew richer each day.

Now, this man had three daughters—Assunta, Carolina, and Bellindia. Assunta and Carolina were selfish and proud, but Bellindia was kind and gentle. While her sisters cared only to please themselves, Bellindia remembered the poor and needy; and no one craved her pity or help in vain.

It chanced one day that the merchant had to go on horseback to a distant port, news having reached him that one of his ships had arrived.

Before he left he asked each of his daughters what he should bring them as presents. Assunta and Carolina chose blue silk dresses; but Bellindia asked only for a white rose tree.

By-and-by the merchant came to the port, and saw his fair ship riding at anchor there. He was well pleased with the cargo it contained, and he bought for his elder daughters two of the finest silk dresses in the market. But somehow he quite forgot about Bellindia's rose tree.

In due time the merchant set out homewards. As he rode along his thoughts were busy with his ship; he failed to keep an eye on the windings of the road, and all at once he found that he had missed his way.

It was night, and he was now in a deep, dark forest. Try as he would, he could not find the right path. His jaded horse walked wearily with drooping head, and his own strength was almost spent; when suddenly they came to a clearing in the forest, and lo! before them gleamed the lights of a splendid mansion.

Thinking this must be a dream, the merchant rubbed his eyes. But, no; the vision did not fade. At sight of it the tired horse quickened its pace, and soon they entered a courtyard paved in marble. Here fountains played, and graceful statues gleamed from amid bowers of flowering shrub.

Yet there was neither sight nor sound of human creature there!

The merchant dismounted, whereupon his horse walked of its own accord through an open door. When the merchant followed, he found that the door led to a lofty stable. In the stable were many stalls, and he saw that each manger was well filled with crisp, sweet-smelling hay.

The merchant then turned to explore the rest of the mansion. Mounting a wide staircase, he wandered in surprise from one lovely room to another.

At last he came to a salon in which supper was spread. Seating himself at table, he ate and drank eagerly. As each course was ended, the dishes were removed by unseen hands, and others took their place.

After supper the merchant lay down to rest in a cedar-wood bed. His rest was sweet, and in the morning he awoke refreshed.

The great mansion was still calm and silent; yet a meal was spread for him, and he was served as promptly as before.

The merchant now made ready to depart. He found his horse well fed and well groomed; and, slipping his arm through the bridle rein, he led him slowly towards the gate.

As he gazed with delight at all the beauty around him, his eye fell on a little white rose tree, and in a flash he remembered Bellindia's gift.

Glancing to right and left, and seeing no one, the merchant stooped down to uproot the pretty plant, when suddenly a voice at his elbow made him start and blush guiltily.

Turning, he saw close by him a wizard, whose countenance was so ugly and so fierce that he shrank back from him. Yet, strange to say, his horse whinnied softly, as if to welcome a friend.

"Have you no shame?" said the wizard harshly. "Having eaten my salt, would you steal my roses too?"

Then the merchant, finding no better excuse, told the story of Bellindia's wish. As he listened, the wizard's harsh looks softened.

"Bellindia," he mused; "it is a gentle name!"

"And the name of a gentle maid," her father answered.

After a pause the wizard spoke again,—

"Go home," he said, "and fetch Bellindia hither. Tell her she must come herself, if she wish to own my white rose tree."

Glad to escape thus easily, the merchant hastened homewards. Bellindia was pleased with the wizard's message; and, though her sisters laughed at her errand,

she gladly set out with her father to get her white rose tree.

They went on horseback, and this time the merchant did not miss his way. Soon they came to the clearing in the forest, and there Bellindia saw the mansion with its marble courtyard and its statues, just as her father had described.

Yet, search as he would, the merchant could no longer find the white rose tree. Day after day they lingered seeking it—in vain!

Their meals were served in the gilded salon, their horses were stalled and fed in the most princely style. Over the door of the loveliest room was written in gold letters: "For Bellindia"; and there each day she found roses of purest white. But where these grew, or whose hand gathered them, she could only guess.

At length the merchant became weary and impatient to be gone.

"I have no time," said he, "to linger longer amid roses. Make ready, Bellindia, to ride away with me at morn!"

Now Bellindia loved the beautiful, silent mansion, and she was sorry to think of going away. As she sat by one of the tinkling fountains, a tear splashed down into the water, and all at once a shadow fell across her path.

Glancing up, Bellindia saw the wizard, and, alas! he was ten times uglier than she had dreamed. Yet she was too kind to wound another's feelings, and so she sat on as though she were not afraid.

"Have you been happy here, Bellindia?" asked the wizard.

"I have been very happy," she said.

"And do you like my roses?" the wizard asked.

"So much," she said, "that fain am I to find the tree on which they grew."

"Then will you marry me, Bellindia?" said the wizard.

But Bellindia, seeing how ugly he looked, answered, "No, no, no!"

At this the wizard's eyes grew so sad that Bellindia's heart ached strangely. Yet she did not take back her words.

The wizard then bade her farewell. He gave her a ring with a green stone in it, and asked her to wear it night and day.

"If the stone should look dim," he said, "you will know that I am in peril. Then perhaps you will come back, and find the white rose tree."

So Bellindia went home wearing the ring on her finger, and her sisters laughed at it because it was so thin and plain.

Yet Bellindia loved her ring, nor could she forget the wizard's sad eyes as he gave it. One day, as she gazed at the stone, she saw that it was almost black, and her heart gave a little throb of pain.

Mounting her horse, she rode in haste to the mansion; and there, by the tinkling fountain, she found the wizard lying as if dead.

At sight of his pale face and sunken eyes she forgot all about his harsh and ugly looks, and only remembered his kindness.

"I am too late!" she cried, "too late! Ah, if you were but alive I would marry you now!"

Then suddenly there grew up at her right hand a little white rose tree. At the same moment the wizard's sad eyes opened.

"You were happy here, Bellindia?" he asked.

"I have not been happy since," was her reply.

"And you will marry me now?" he asked.

"I will marry you now," she said.

As she spoke, she plucked a white rose from the tree, and gave it to him.

"It is the Rose of Pity," said the wizard gladly. "See! I change it to the Rose of Love!"

With these words he sprang to his feet, and clasped Bellindia to his breast. And, lo! the white rose blushed to deepest crimson, while a wonderful change was wrought in the wizard himself. He was no longer harsh and ugly, but tall and strong and splendid as a king.

Then the wizard told how he had been under a spell. And the spell was this—that he should have power to make all around him lovely, save himself. But he was doomed to remain ugly and terrible until some fair maiden's pity should break the spell.

So Bellindia and the wizard were married, and lived happy ever after; and Bellindia's courtyard was sweet, summer and winter, with red and white rose trees.

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## THE RAIN BABIES,

### And their Wonderful Journeys from the Earth to the Sky and from the Sky to the Earth.

BY MARGARET BOUGHTON.

IT was spring-time, and the Rain Babies, in the cool, clear, shining pool which was their home, looked longingly up at the clear blue sky, so very, very far above their heads.

"Ah, how nice to see the sky!" cried one Baby; and another sighed,—

"Yes, if only we had wings!"

"Little grumblers, have patience!" whispered the soft West Wind as he swept over the pool, gently stirring it and making the Rain Babies dance in its clear depths. "Soon you shall go on a long journey to that very sky you see above your heads!"

The Rain Babies gasped with astonishment and joy.

"When, West Wind, when?" they asked eagerly. But the West Wind was already sweeping away, and they only heard his soft voice calling back,—

"Soon—soon—so—oo—oon!"

The Babies sighed. "All very well for him!" they muttered; "he can travel wherever he pleases. But we poor little things must stay here in this stupid old pool, and never get a chance to see the world!"

"Little grumblers, have patience!" laughed a gay, golden Sunbeam, darting across the pool. "Soon you shall come on a long journey with me to that very sky you see above your heads!"

"Ah!" murmured the Rain Babies; "that's just what West Wind said. And then he flew away and left us here! When are we going on this wonderful journey? That's what we want to know! When? When? When?"

"Soon—soon—soon!" laughed the Sunbeam, and away he sped, to help some sleepy daffodil buds off with their green coats. But the Rain Babies groaned and grumbled, and believed that both West Wind and the Sunbeam were making fun of them.

Then, the very next morning, something wonderful happened. No less a person than the Sun—the splendid, powerful, golden Sun himself—sent a message down to the Rain Babies, inviting them to pay him a visit in the sky. The Sunbeam who brought the message was the very same one who had danced across the pool the day before, and he twinkled merrily at the Rain Babies' surprise.

"What did I tell you?" he said. "Now hurry up, my little friends; don't keep my father waiting!"

"But however are we to get up there?" sobbed the Rain Babies. "We haven't any wings, you see!"

"Oh, that will be all right!" said the cheery Sunbeam. "Just let me touch you—so!"

And he touched them with his wonderful fairy fingers with the magic touch of which only Sunbeams know the secret, and they have learnt it from their father.

Then, lo and behold! the sparkling Rain Babies changed into the daintiest, lightest Cloud Fairies that ever you dreamt about. Daintily and lightly they floated up, up, up to the sky, drawn by the magic power of the golden Sun, who wanted them to visit him in his beautiful home.

How frightened the Rain Babies felt at first as they left their old home far below and rose to the sky! But they soon forgot their fears when they met with many other Cloud Fairies, who, like themselves, had once been little Rain Babies, living in pools and rivers and lakes and in the sea, till the Sun called them.

Many a merry game they had together in the sky, and many a happy day passed by; but at last the Rain Babies began to feel rather tired of being Cloud Fairies, and wished in their hearts that they could change back again.

"After all," one whispered to his brothers, "it *was* nice and cosy in the pool down on the Earth below, wasn't it?"

"Yes," said another; "I'd like to see it again!"

"I'd like to go and *live* there again!" joined in a third boldly; and a fourth added,—

"I wish we hadn't grumbled so! Shall we ever go home again?"

And the Rain Babies sighed, and looked down at the Earth, so far below, wondering how they should ever manage to reach it.

But the very next day the Sun summoned them, and they hurried to hear what he had to say.

"Children!" said the Sun, and they listened respectfully to him, "I have work for you to do. Much as I love you, you cannot stay here with me. Mother Earth is longing for a shower, to cheer and refresh her sick children. Go, then, my dears, for West Wind is calling you!"

And as he spoke the last words, lo and behold! every light and dainty Cloud Fairy turned again into a sparkling Rain Baby!

Great was their surprise, but great also was their joy. Softly West Wind's voice called them,—

"Come, little Rain Babies! Come—come—come!"

"Yes, yes, we're coming," cried all the Rain Babies eagerly. "Good-bye, dear, kind Mr. Sun!"

"Good-bye, dear little Rain Babies!" smiled the Sun. "Come to see me again some day."

"We will, and thank you ever so much," answered the Rain Babies gratefully.

"Hurry—hurry!" called West Wind, "or I shall go without you!"

"Oh, don't do that!" said the Rain Babies; and off they went. Hurrying, scurrying, racing, chasing, skipping, tripping, laughing, chaffing—off they went on their long journey from the sky to the Earth, so far below.

They slipped into her warm, brown arms at last, and she was glad to have them back again. Down amongst the thirsty roots they crept, and fed them. Then when that work was done they travelled on, gladly keeping all together, till at last they came out under a tuft of grasses into a cool, clear, shining pool.

And when the Rain Babies looked about them they cried out in great joy, "Why, it's our *own* pool!"

And so it was—their very own dear home, which they had once longed to leave, and were now so happy to see again.

Did they ever pay another visit to the Sun? Well, yes, they did; many and many a one! But that's quite another story.

## HOLIDAY NOTES.

1. We have received from the clerk of the Glamorgan County Council an attractive booklet, which forms the programme of the Summer School at Barry, and provides full and complete descriptions of the various classes which are to be conducted in the County School of that town, from Monday July 31 to Saturday August 26. The programme can be obtained from the Chief Education Official at 35 Park Place, Cardiff, and we recommend all those teachers who wish to take up Manual and Art Courses to study it with the greatest care.

2. For short holiday trips to the Continent we have always recommended, and we continue to recommend, the London and South-Western Railway, under whose auspices many of our readers have been made acquainted with the beauties of Normandy and Brittany. For particulars of the fortnightly excursion tickets issued by this enterprising company our readers are recommended to apply to Mr. H. Holmes, Superintendent of the Line, Waterloo Station, London, or to Mr. T. M. Williams, Docks and Marine Manager, Southampton.

## HISTORICAL METHOD IN SCIENCE TEACHING.

BY J. G. M°INTOSH, B.SC., SECONDARY SCHOOL, GATESHEAD.

SIR OLIVER LODGE, in his work on *School Teaching and School Reform*, pertinently remarks that,—

"Science is best taught and best assimilated in the nascent stage—the stage of growth and development, the stage of fresh perception and discovery; its special aroma is lost if it is imparted as a thoroughly understood and organised system alone, though that too is one aspect of it. The fringe of knowledge, the boundary between acquisition and ignorance, is always the most exciting region."

Now, it is precisely this keen desire for the acquisition of knowledge by means of independent discovery that the teacher desires most to foster in the pupil. In these days of utilitarianism and commercialism there is just a danger that the short cut to knowledge should be taken at the expense of the gradual development of the mind of the child, with the inevitable result that interest instead of being aroused is lost, and the subject voted to be extremely boring.

It is equally true that every day new scientific truths are being discovered, find their way into the daily press, and rouse for the time being an adventitious and popular interest, thus acting as a powerful stimulant and encouraging a deeper study of scientific things amongst the public generally; but the proportion of this development which can be applied to school life in its nascent stage is extremely small. The teacher is therefore confronted with the problem of supplying this nascent stage. On the whole this can best be done by a careful study of the historical development of a science, and an adaptation of the methods which have in every case grown up in the investigation in a natural sequence.

In his book on the study of mechanics, the late Professor Mach of Prague and Vienna says:—

"The analysis of the history of the discussions concerning the investigation of simple and special cases of mechanical processes must ever remain the method at once the most effective and most natural for laying bare the gist and kernel of mechanical ideas. Indeed it is not not too much to say that it is the only way in which a real comprehension of the general upshot of mechanics is to be attained."

Among the simplest of these mechanical processes, as they were wont to be called, is that of the inclined plane. It is, of course, only natural that the attention of early scientists should be directed more especially to it. Probably it represents the oldest method of transportation in the history of engineering, and would be largely used in the erection of some of the mighty monuments of the past.

Hence we find that Galileo, in his treatise, *Discorsi e dimostrazioni matematiche*" (1638), continually demonstrates the truth of the principles he enunciates with regard to the laws of falling bodies, by constant reference to experimental results obtained by observing the motion of a body down an incline.

His general method of attacking a scientific problem was twofold. Firstly, he made an assumption, and obtained a general deduction from this based on methods of geometrical reasoning; secondly, he tested the truth of the law which he had deduced by direct experiment. In this respect Galileo may be said to be the founder

of the modern spirit of scientific research. How a thing happened, not merely why, was the object of his investigation.

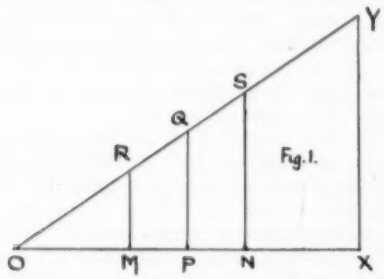
Should the previous assumption not accord with experimental investigation, he made a second and put it to the test. This method is to some extent followed and advocated by Professor Perry in his tract on *Practical Mathematics*. Speaking of the discovery of empirical laws by the graphic method from observed experimental results in cases where a straight line graph is not obtainable by directly plotting the variables, say $x$ and $y$, he advocates the trial of $x^2$, $\frac{1}{x}$, $\frac{1}{x^2}$, etc., until a straight line graph is obtained, or until the *experience* of the student enables to discriminate more exactly the particular graph family to which the results appear to most closely approximate.

Perhaps Galileo's method can be best illustrated by taking a specific example. He sets out to discover the laws of falling bodies, and propounds to himself the question, "How do heavy bodies fall?"

He first notes that, as the distance travelled increases, the velocity also increases, and makes the assumption that the velocities acquired during descent are proportional to the total distances travelled. Before putting this assumption to the test of experiment he examines it critically, and eventually arrives at the conclusion that the assumption is based upon an impossible state of affairs, leading to the conclusion that the motion of a falling body is instantaneous. He accordingly rejects this as untenable, and proceeds to a second assumption, that the velocity of descent and the time taken are connected in a simple proportion. Having satisfied himself that this assumption involves no apparent absurdity, he proceeds to test it by experiment, first deducing from his assumption the relations existing between distance traversed and time.

The method here employed is geometrical and interesting, and indeed largely used in text-books of mechanics of the present day.

Along a line OX he represents times. At the points denoting the ends of these times he erects ordinates to represent the corresponding velocities. Thus XY represents the velocity at the end of the time OX; and therefore, according to his assumption, OY is the velocity time graph. Galileo reasons as follows: The velocity at half the interval is measured by PQ, which is one-half the final velocity XY. If equal intervals of time be taken antecedent and subsequent to the instant P, the velocities at M and N are MR and NS, and MR is as




much less than PQ as NS is greater. Hence he concludes that any loss in the first half of the motion, as compared with a uniform velocity equal to PQ, is gained in the second half, and therefore that the total distance traversed during the time of motion would be equivalent to that traversed with uniform motion and half the final velocity; in other words, if $f$ be the final velocity in a unit of time $s = \left(\frac{ft}{2}\right)t = \frac{1}{2}ft^2$, and therefore $sat^2$.

The deduction he proceeds to verify by experiments with balls running down inclined grooves. Beginning at the top he notches distances corresponding to the numbers 1, 4, 9, 16, etc., and finds the times to be represented by the numbers 1, 2, 3, 4, etc.

I have already, in the April number of the *Practical Teacher*, cursorily referred to the most ingenious method adopted by Galileo for estimating time. His clock consisted of a vessel of water of very large transverse dimensions having a minute hole at the bottom, which he closed with his finger. At the instant of releasing the body, Galileo removed his finger, and collected the water discharged during the interval. Provided the pressure-height is constant the weight of water discharged is proportional to the time; and, in Galileo's case, he provided against any perceptible alteration in pressure by using a vessel of large dimensions. The method is more applicable to laboratory work, if the pressure-height be kept constant by a simple siphon arrangement.

With a little modification the historical method here indicated is applicable to present-day teaching. In the laboratory we should presumably attack the problem in the reverse order, by experiment and record of the variables introduced, a graphic interpretation of the results; and, in the light of a greater mathematical knowledge, the precise statement of an empirical law in the form of a definite formula. Elaboration of apparatus is unnecessary; indeed, the simpler it is the better. Galileo's method of computing time is perhaps laborious, but it has the merit of arousing much interest amongst young students. For those who are more advanced in knowledge, Mr. Fletcher's trolley apparatus—suggested, I believe, to him by a childish toy—provides an extremely good and accurate method of registering time and distance traversed simultaneously.

We thus see that while Galileo's method was primarily deductive, and then experimental, ours is rather experimental and inductive. At the same time, I am strongly of the opinion that occasional exercises in deductive reasoning, and confirmation of the deduction by experimental methods, acts as a healthy stimulus to the pupil, giving him confidence and reliance in his own mental processes.

Again, in arriving at the relationship existing between motion down an incline and that of free descent, Galileo makes the assumption that the final velocity attained by a body on an inclined plane is equal to that which the body would have falling through the same vertical height. He arrives at this logically in the following way.

If a body fall freely downwards its velocity is proportional to the time. Imagine at any instant its velocity to be reversed and decrease vertically in the same proportion, then it will continue to rise for as long a time as it descended, and ultimately reach its original height with zero velocity. If such a body be placed upon a double V-shaped inclined plane of different angles, the velocity acquired during its descent of one plane should carry it to the same height up the other plane. If it reached a lower height, the result is to be attributed to frictional resistance; if a higher height, the assumption is that bodies rise by the force of gravitation. In such an assumption, therefore, there is nothing beyond a recognition of the fact that heavy bodies tend to fall and not to rise.

The experimental demonstration is again exceedingly neat and ingenious.

Galileo took a long pendulum with a heavy bob attached, and by giving it a definite amplitude, AB, raised it to a given vertical height, AC. On allowing it to fall it reached the same level, BD, on the other side. Any deficiency he attributed to air resistance, and tested this by substituting a cork bob.

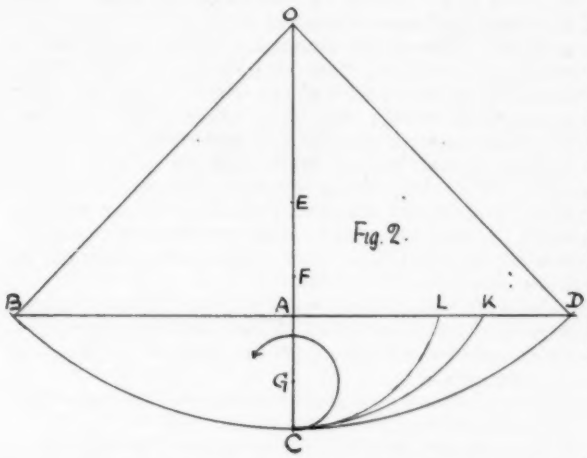


Fig. 2.

He regarded the descent of the arc BC as a motion of descent along a series of inclined planes. He now placed nails at E and F, and repeated the experiment. The moment the thread reaches E, the length of the pendulum alters, the upper part of the thread becoming stationary, and a new arc, CK, is traversed, the bob again reaching the same horizontal level, BD, although traversing a new series of inclined planes. The experiment is repeated for various positions of the nail F and G; and in the latter case the ball, on reaching its greatest height, which is below the level of BD, has a resultant velocity, enabling it to turn completely over, and wind the thread round the nail. Having established the truth of his assumption, Galileo deduces the fact that the times of descent vertically and down the length of the plane are proportional to the height and the length respectively; thus :—

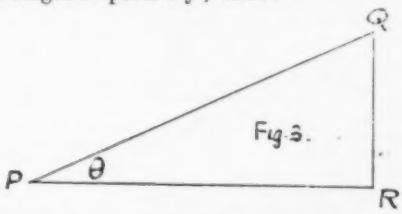


Fig. 3.

Let PQ be the length of the plane and QR the height. Let the times of descent be T and $T_1$ respectively, and the final velocity in each case be V.

Then $PQ = \frac{v}{2} \cdot T$ and $QR = \frac{v}{2} \cdot T_1$.

$$\therefore \quad \frac{PQ}{QR} = \frac{T}{T_1}.$$

If the accelerations be $f$ and $f_1$, we have $v = fT$ and $v = f_1T_1$.

Hence $$\frac{f}{f_1} = \frac{T_1}{T} = \frac{QR}{PQ} = \sin\theta.$$

Therefore $f = f_1 \sin\theta$.



# RELIGION, MORALS, AND MANNERS.

## A COURSE OF BIBLE TEACHING FOR THE SCHOOL AND HOME.

BY J. EATON FEASEY, HEADMASTER OF THE RANMOOR SCHOOL, SHEFFIELD (UNIVERSITY DEMONSTRATION SCHOOL), A LECTURER IN EDUCATION IN THE SHEFFIELD UNIVERSITY

HAROLD, the king of the Saxons, was as strong in his hatred of falsehood and his love of truth as was his great predecessor Alfred, surnamed the Truth-teller. "Better die than lie" is the phrase which Tennyson puts again and again into the lips of Harold. And yet this king is known in history to have broken a promise, and that an oath taken on the bones of the saints. The circumstances were certainly very difficult. He had fallen in the days of Edward the Confessor into the hands of William of Normandy, whose ambition was to become king of England, an ambition stimulated by the fact that Edward the Confessor had promised that Duke William should be his successor. True, Edward had no right to make such a promise. Says Malet :—

> "Here the great assembly choose their king;
> The choice of England is the voice of England."

But William had determined, if it were by any means possible, he would obtain fulfilment of the promise. Now Harold, son of Godwin, was of all men most likely to be chosen by the voice of England should Edward die. When therefore the duke found Harold in his power, he traded on the known love of the great Saxon for truth to gain his ends. He says of Harold :—

> "Being brave he must be subtly cowed,
> And being truthful wrought upon to swear
> Vows that he dare not break."

The upshot of it all is, that being very hard pressed, Harold says "Ay" when William asks if he will help him to the crown of England, and later he is led by a trap to swear by the bones of the saints, and is then permitted to go free. A few months pass, and Harold is chosen king of his native England, and prepares to break his oath, to disregard his promise, and repel the attempt of William to gain the throne.

Now, was he right in this? He had promised; but the promise had been obtained by force. And, moreover, William knew perfectly well that neither Harold nor Edward had power to give to him the crown of England. Still, Harold had promised. He argues thus to himself :—

> "He is a liar who knows I am a liar
> And makes believe that he believes my word,
> The crime be on his head—not bounden—no!"

Then when, before the fight at Senlac, a Norman monk reminds him of his promise and his oath, he says:—

> ". . . for my part therein—Back to that juggler,
> Tell him the saints are nobler than he dreams,
> Tell him that God is nobler than the saints,
> And tell him we stand arm'd on Senlac Hill
> And bide the doom of God."

It is certain that before one condemns Harold for breaking his oath, or for making it, one must look carefully into all the circumstances, must weigh one evil against another evil, one duty against another duty.

Now, it is on this question of making and breaking

of promises that we want to examine the Bible teaching. Let it be said first of all that the Scriptures everywhere enjoin truthfulness and fidelity. It is quite certain, then, that no man may lightly break his promise. Indeed, "faithfulness to his word" is especially emphasised as an attribute of God Himself, as witness these following passages :—

"Know therefore that the Lord thy God, he is God, the faithful God, which keepeth covenant and mercy with them that love him and keep his commandments to a thousand generations" (Deuteronomy vii. 9).

"And Solomon stood before the altar of the Lord in the presence of all the congregation of Israel, and spread forth his hands toward heaven: And he said, Lord God of Israel, there is no God like thee, in heaven above, or on earth beneath, who keepest covenant and mercy with thy servants that walk before thee with all their heart: Who hast kept with thy servant David my father that thou promisedst him: thou spakest also with thy mouth, and hast fulfilled it with thine hand, as it is this day" (1 Kings viii. 22–24).

These are but samples of many passages which exhibit God to us as the faithful God, keeping His promises. Hence any one who would be godly—that is, god-like—must be characterised in this way. Moreover, the performance of vows or promises is directly and repeatedly enjoined, as follows :—

"When thou vowest a vow unto God, defer not to pay it; for he hath no pleasure in fools: pay that which thou hast vowed. Better is it that thou shouldest not vow, than that thou shouldest vow and not pay." (Eccles. v. 4–5).

"When thou shalt vow a vow unto the Lord thy God, thou shalt not slack to pay it: for the Lord thy God will surely require it of thee; and it would be sin in thee. But if thou shalt forbear to vow, it shall be no sin in thee. That which is gone out of thy lips thou shalt keep and perform; even a freewill offering, according as thou hast vowed unto the Lord thy God, which thou hast promised with thy mouth" (Deut. xxiii. 21–23).

It is, however, when we come to examine narratives of specific cases that the teaching becomes most interesting and suggestive. We take first an example of the breaking of a promise in an altogether mean and contemptible way.

"And Laban had two daughters: the name of the elder was Leah, and the name of the younger was Rachel. Leah was tender-eyed; but Rachel was beautiful and well-favoured. And Jacob loved Rachel: and said, I will serve thee seven years for Rachel thy younger daughter. And Laban said, It is better that I give her to thee, than that I should give her to another man: abide with me. And Jacob served seven years for Rachel; and they seemed unto him but a few days, for the love he had to her. And Jacob said unto Laban, Give me my wife, for my days are fulfilled, that I may go in unto her. And Laban gathered together all the men of the place, and made a feast. And it came to pass in the evening, that he took Leah his daughter, and brought her to him; and he went in unto her. And Laban gave unto his daughter Leah Zilpah his maid for an handmaid. And it came to pass, that in the morning, behold, it was Leah: and he said to Laban, What is this thou hast done unto me? did not I serve with thee for Rachel? wherefore then hast thou beguiled me? And Laban said, It must not be so done in our country, to give the younger before the firstborn. Fulfil her week, and we will give thee this also for the service which thou shalt serve with me yet seven other years. And Jacob did so, and fulfilled her week: and he gave him Rachel his daughter to wife also" (Gen. xxix. 16–28).

Here Laban deliberately, and in the meanest possible manner, broke his promise for his own advantage, simply because it was more profitable and convenient to himself, and the younger man was in his power. His excuse about "the custom of the country" was paltry, inasmuch as had this been sufficient excuse, it should have been enough to prevent him *making* his promise. This is conduct to be despised! Perhaps Laban's conduct is the more contemptible because he made pretence of keeping it. It was not till the bridal veil was lifted that his base deception was discovered.

Not less contemptible is it for one to evade the fulfilment of a promise by some trick or juggling with words. An old Greek story tells of a merchant who promised at the altar of the god Mercury to give half of whatever he should gain on a certain journey in return for the protection of the god. He gained a bag of dates and almonds. Then having eaten the fruits, the rogue laid upon the altar the stones of the dates and the shells of the almonds. "This is the half I promised," said he; "for here are the outsides of the almonds and the insides of the dates." As a jest this is laughable enough, but when tricks of this sort are played in earnest the thing is mean and wicked. A promise should be kept really and not in appearance only. People of the Laban class are schemers and liars; and of such Jesus said that their father was the devil. Lying, cheating, making promises without intending to fulfil them, are altogether repugnant to Christian character and teaching.

We turn now to three cases where vows or promises were made in times of excitement or enthusiasm, the fulfilment of which placed the promisers in positions of extreme gravity.

There is first the extraordinary case of the men who bound themselves by an oath to kill Paul.

The apostle was at Jerusalem, and the rage of a section of the people against him grew to such a pitch that forty men took a solemn oath that they would neither eat nor drink till they had killed him. Paul's nephew, however, heard of the plot, and revealed it to the chief captain who had Paul in charge. The result was that an escort of 470 men conveyed him in the night away to the governor Felix, and the conspirators were left in a strange predicament. There is an element of humour in the story which should not be missed.

"And when it was day, certain of the Jews banded together, and bound themselves under a curse, saying that they would neither eat nor drink till they had killed Paul. And they were more than forty which had made this conspiracy. And they came to the chief priests and elders, and said, We have bound ourselves under a great curse, that we will eat nothing until we have slain Paul. Now therefore ye with the council signify to the chief captain that he bring him down unto you to-morrow, as though ye would inquire something more perfectly concerning him: and we, or ever he come near, are ready to kill him. And when Paul's sister's son heard of their lying in wait, he went and entered into the castle, and told Paul. Then Paul called one of the centurions unto him, and said, Bring this young man unto the chief captain: for he hath a certain thing to tell him. So he took him, and brought him to the chief captain, and said, Paul the prisoner called me unto him, and prayed me to bring this young man unto thee, who hath something to say unto thee. Then the chief captain took him by the hand, and went with him aside privately, and asked him, What is that thou hast to tell me? And he said, The Jews have agreed to desire thee that thou wouldest bring down Paul to-morrow into the council, as though they would inquire somewhat of him more perfectly. But do not thou yield unto them: for there lie in wait for him of them more than forty men, which have bound themselves with an oath, that they will neither eat nor drink till they have killed him: and now they are ready, looking for a promise from thee. So the chief captain then let the young man depart, and charged him, See thou tell no man that thou hast showed these things to me. And he called unto him two centurions, saying, Make ready two hundred soldiers to go to Cæsarea, and horsemen threescore and ten, and spearmen two hundred, at the third hour of the night; And provide them beasts, that they may set Paul on, and bring him safe unto Felix the governor. And he wrote a letter after this manner: Claudius Lysias unto the most excellent governor Felix sendeth greeting. This man was taken of the Jews, and should have been killed of them: then came I with an army, and rescued him, having understood that

he was a Roman. And when I would have known the cause wherefore they accused him, I brought him forth into their council: Whom I perceived to be accused of questions of their law, but to have nothing laid to his charge worthy of death or of bonds. And when it was told me how that the Jews laid wait for the man, I sent straightway to thee, and gave commandment to his accusers also to say before thee what they had against him. Farewell. Then the soldiers, as it was commanded them, took Paul, and brought him by night to Antipatris" (Acts xxiii. 12–31).

The history does not say what happened to this noble forty. Did they starve to death? Or did they break the oath which bound them? What *ought* they to have done? It will hardly do to say they ought not to have *made* the promise. Possibly they were of those of whom Jesus had warned His disciples: "Whosoever killeth you will think that he doeth God service." Suppose this was what the forty thought; what were they to do? To keep the vow meant suicide. Still it would have been upon themselves that the principal burden would have fallen. One imagines that Paul, and his sister, and his nephew, and many others would smile at the quandary into which the would-be assassins had fallen; and one guesses that it was not long before the forty were eating and drinking as usual.

Our second story lies in the remote days, when there was no king in Israel. The Israelites, being threatened by the Ammonites, called upon Jephthah, an outlaw dwelling in the land of Tob, to come to them in their distress, promising that he should be head of all Gilead if the war should be successful. He agreed, and after some futile negotiations the war began. In these anxious and exciting times "Jephthah vowed a vow unto the Lord, and said: 'If thou shalt without fail deliver the children of Ammon into mine hands, then it shall be that whatsoever cometh forth of the doors of my house to meet me, when I return in peace from the children of Ammon, shall surely be the Lord's, and I will offer it up for a burnt-offering.'" Now the Lord did deliver them into his hand, and he smote them with a very great slaughter. Then came this tragic sequel:—

"And Jephthah came to Mizpeh unto his house, and, behold, his daughter came out to meet him with timbrels and with dances: and she was his only child; beside her he had neither son nor daughter. And it came to pass, when he saw her, that he rent his clothes, and said, Alas, my daughter! thou hast brought me very low, and thou art one of them that trouble me: for I have opened my mouth unto the Lord, and I cannot go back. And she said unto him, My father, if thou hast opened thy mouth unto the Lord, do to me according to that which hath proceeded out of thy mouth; forasmuch as the Lord hath taken vengeance for thee of thine enemies, even of the children of Ammon. And she said unto her father, Let this thing be done for me: let me alone two months, that I may go up and down upon the mountains, and bewail my virginity, I and my fellows. And he said, Go. And he sent her away for two months: and she went with her companions, and bewailed her virginity upon the mountains. And it came to pass at the end of two months, that she returned unto her father, who did with her according to his vow which he had vowed: and she knew no man. And it was a custom in Israel, That the daughters of Israel went yearly to lament the daughter of Jephthah the Gileadite four days in a year" (Judges xi. 34–40).

Now this case differs from the last in that the evil which would follow from the fulfilment of the vow would fall most heavily upon a perfectly innocent child who had had no part in making the vow. What ought Jephthah to have done? His promise weighed heavily upon him. "I have opened my mouth to the Lord, and I cannot go back," he wails. Perhaps if Jephthah had known as much of the character of God as those do who have lived after the coming of the revelation of Jesus, he would not have hesitated. We cannot imagine but that the burning of his innocent daughter would be much more displeasing to God than the breaking of his oath. We may learn two things: first, to avoid all rashness in our promises; second, to break our promise if its fulfilment is found to involve us in a greater crime.

The third case is similar to the second in some respects, though only adults are concerned, and the occasion of the promise is of a much baser character. It amounts simply to this. A half-intoxicated king promises to give a dancing girl anything for which she likes to ask. She asks for the murder of one whom her mother hates. Here is the dramatic, sordid, tragic tale:—

"And when a convenient day was come, that Herod on his birthday made a supper to his lords, high captains, and chief estates of Galilee: And when the daughter of the said Herodias came in, and danced, and pleased Herod and them that sat with him, the king said unto the damsel, Ask of me whatsoever thou wilt, and I will give it thee. And he sware unto her, Whatsoever thou shalt ask of me, I will give it thee, unto the half of my kingdom. And she went forth, and said unto her mother, What shall I ask? And she said, The head of John the Baptist. And she came in straightway with haste unto the king, and asked, saying, I will that thou give me by and by in a charger the head of John the Baptist. And the king was exceeding sorry; yet for his oath's sake, and for their sakes which sat with him, he would not reject her. And immediately the king sent an executioner, and commanded his head to be brought: and he went and beheaded him in the prison, And brought his head in a charger, and gave it to the damsel: and the damsel gave it to her mother. And when his disciples heard of it, they came and took up his corpse, and laid it in a tomb" (Mark vi. 14–29).

Now, notice that here is a promise made under excitement, probably under the excitement due to drink; here is a man who will put to a cruel death one of the greatest of men rather than break his promise. "For the oath's sake, and them which sat with him at meat," he did this abominable thing—a deed which haunted him for many a day. What should he have done? Dean Farrar puts it thus: "If a single touch of manliness had been left in him he would have repudiated the request as one which did not fall either under the letter or the spirit of his oath, since the life of one cannot be the gift of another; or he would have boldly declared at once, that if such was her choice, his oath was more honoured by being broken than by being kept. But a despicable pride and fear of man prevailed over his better impulses. More afraid of the criticisms of his guests than of the future torment of such conscience as was left him, he immediately sent an executioner to the prison; and so at the bidding of a dissolute coward, and to please the loathly fancies of a shameless girl, the axe fell, and the head of the noblest of the prophets was shorn away." Then we read, with simple pathos, that the Baptist's lonely, heart-broken disciples did all that was left to them: they "went and told Jesus."

There still remains the hard case with which we started. With Harold, the promise was extracted by force. It was not like that of Jephthah, where that happened which was not dreamed of. It was not like that of the forty Jews, an oath voluntarily undertaken. It was not like that of Herod, foolishly given and wickedly presumed upon. It is easy to say that Harold should not have promised; but one must consider all that Wulfnoth urges as likely to happen if Harold should be kept in a Norman dungeon. It was a terrible position for a man to be placed in. Perhaps we had better leave such a man in such a case to his conscience and his God.

# Our Query Column.

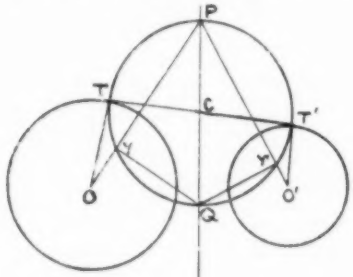
Solutions by A. Clement Jones, M.A., Ph.D., Senior Mathematical Master, Bradford Grammar School.

The Editor wishes to thank those querists who have so generously given expression to their satisfaction at the courteous treatment afforded to them by Dr. Clement Jones in his able conduct of the Query Column. It has given Dr. Jones very great pleasure to be the means of helping so many earnest students, and the work is concluded with every good wish for their future success.

**Secretary.**—If P and Q be points on the radical axis of two circles, and P, Q be conjugate points for one circle, they are also conjugate for the other.

(i) Suppose the circles cut in real points A and B, then AB is the radical axis and P, Q lie on AB. Since P, Q are conjugate points with respect to one circle, {PQAB} is an harmonic range. Since {PQAB} is harmonic, PQ are conjugate with respect to the other circle. This may be extended by imaginary projection to the case when the circles intersect in imaginary points.

(ii) Otherwise, if the circles do not meet in real points, let C be the mid point of PQ. On PQ as diameter draw a circle cutting the given circles at T and T′, and also OP, O′P at Y and Y′. Join QY, QY′.




Since QY is perpendicular to OP, and Q is conjugate to P with respect to the circle O, QY is the polar of P. Hence $OY \cdot OP = OT^2$, and the circle PTQ cuts the circle O orthogonally, therefore CT is a tangent to the circle O. The tangents from C to the two circles are equal, since C lies on the radical axis, therefore CT′ is a tangent to the circle O′. Consequently the circle PT′Q cuts the circle O′ orthogonally —that is, O′T′ is a tangent to it. Hence $O'P \cdot O'Y' = O'T'^2$ —that is, Y′ is on the polar of P. But QY′P is a right angle, hence QY′ is the polar of P with respect to the circle O′. Hence P and Q are conjugate for the circle O′.

**Koko.**—A particle is projected at right angles to the line joining it to a centre of force attracting according to the law of the inverse square, with a velocity $\frac{\sqrt{3}}{2}v$, $v$ being the velocity from infinity. Find the eccentricity of the orbit described, and show that the periodic time is $2\pi\tau$, $\tau$ being the time taken to describe the major axis of the orbit with uniform velocity $v$.

(B.Sc., 1909.)

Firstly, if the particle start from infinity along a straight line to the centre of force, since

$$\frac{d^2x}{dt^2} = -\frac{\mu}{x^2}, \left(\frac{dx}{dt}\right)^2 = \frac{2\mu}{x},$$

since the velocity is zero when $x$ is infinite.

Now the particle is projected at right angles to the line joining it to the centre of force (S), so that the initial position is A. Let $AS = a(1-e) = c$.

Then $$v^2 = \frac{2\mu}{c}.$$

Now if $\frac{h}{2}$ is the area described by the radius vector in unit time, we have $pv = h$.

Hence $$h = \frac{c\sqrt{2}v}{2}.$$

But since the law of attraction is the inverse square,

$$h^2 = \mu a(1-e^2) = \frac{cv^2}{2}a(1-e^2).$$

Hence $$\frac{3c^2v^2}{4} = \frac{cav^2}{2}(1-e^2);$$

that is, $$3c = 2a(1-e^2);$$

that is, $$3(1-e) = 2(1-e^2);$$

that is, $$3 = 2(1+e). \quad \therefore e = \tfrac{1}{2}.$$

Now $\tau = \frac{2a}{v}$, and the periodic time $= \frac{2\pi ab}{h}$; but

$$b = a\sqrt{1-e^2} = \frac{\sqrt{3}a}{2}, \text{ and } h = \frac{c\sqrt{3}v}{2} = \frac{a\sqrt{3}v}{4}.$$

$$\therefore \quad \frac{ab}{h} = \frac{2a}{v} = \tau;$$

that is, the periodic time is $2\pi\tau$.

The proofs of the equations $pv = h$ and $h^2 = \mu l$ are given in any book on dynamics under central orbits.

**Glevum.**—(*a*) Find the sum of the series

$\cos\alpha + \cos(\alpha+\beta) + \cos(\alpha+2\beta) + \ldots + \cos\{\alpha + \overline{n-1}\beta\}$.

(*b*) If $\alpha = 24°$ show that

$$\cos\alpha + \cos 2\alpha + \cos 4\alpha + \cos 8\alpha = \tfrac{1}{2}.$$

(*c*) Show that the sum to $n$ terms of the series

$1 + \cos r\theta \cos s\theta + \cos 2r\theta \cos 2s\theta + \cos 3r\theta \cos 3s\theta + \ldots$

where $\theta = 2\pi/n$, and $r$, $s$ are positive integers less than $n/2$, is zero if $s$ is not equal to $r$, but is $\frac{1}{2}n$ if $s = r$.

(Board of Education, Honours, 1907.)

(*a*) Multiply the series by $2\sin\frac{\beta}{2}$, so that if S stand for the sum required,

$$2\sin\frac{\beta}{2}\cdot S = 2\sin\frac{\beta}{2}\cdot\cos\alpha + 2\sin\frac{\beta}{2}\cdot\cos(\alpha+\beta) + \ldots + 2\sin\frac{\beta}{2}\cos(\alpha+\overline{n-1}\beta)$$

$$= \sin\left(\frac{\beta}{2}+\alpha\right) - \sin\left(\alpha-\frac{\beta}{2}\right) + \sin\left(\alpha+3\frac{\beta}{2}\right) - \sin\left(\alpha+\frac{\beta}{2}\right) + \sin\left(\alpha+5\frac{\beta}{2}\right) - \sin\left(\alpha+3\frac{\beta}{2}\right) + \ldots + \sin(\alpha+\overline{n-\tfrac{1}{2}}\cdot\beta) - \sin(\alpha+\overline{n-\tfrac{3}{2}}\cdot\beta)$$

$$= \sin(\alpha+\overline{n-\tfrac{1}{2}}\beta) - \sin\left(\alpha-\frac{\beta}{2}\right)$$

$$= 2\sin\frac{n\beta}{2}\cdot\cos\left(\alpha+\overline{n-1}\frac{\beta}{2}\right).$$

Thus $$S = \sin n\frac{\beta}{2}\cdot\cos\left(\alpha+\overline{n-1}\frac{\beta}{2}\right)\div\sin\frac{\beta}{2}.$$

(*b*) $\cos\alpha + \cos 2\alpha + \cos 4\alpha + \cos 8\alpha$

$= (\cos\alpha + \cos 4\alpha) + (\cos 2\alpha + \cos 8\alpha)$

$= 2\cos\frac{3\alpha}{2}\cos\frac{5\alpha}{2} + 2\cos 3\alpha\cos 5\alpha.$

But $5\alpha = 120°$, $\frac{5\alpha}{2} = 60°$.

$$\therefore \quad = \cos\frac{3\alpha}{2} - \cos 3\alpha$$

$$= \cos 36° - \cos 72°$$

$$= 2\sin 18°\sin 54°$$

$$= 2\sin 18°\cos 36°$$

$$= 2\,\frac{\sqrt{5}-1}{4}\cdot\frac{\sqrt{5}+1}{4}$$

$$= \tfrac{1}{2}.$$

(c) Let

$$S = 1 + \cos r\theta \cos s\theta + \cos 2r\theta \,.\, \cos 2s\theta + \cos 3r\theta \cos 3s\theta + \text{to } n \text{ terms.}$$

Then

$$2S = \{1 + \cos r+s\,\theta + \cos 2(r+s)\,\theta + \cos 3(r+s)\,\theta \ldots \text{to } n \text{ terms}\} + \{1 + \cos r-s\,\theta + \cos 2(r-s)\,\theta + \cos 3(r-s)\,\theta \ldots \text{to } n \text{ terms}\}$$

$$= \frac{\sin n(r+s)\frac{\theta}{2} \,.\, \cos (n-1)(r+s)\frac{\theta}{2}}{\sin (r+s)\frac{\theta}{2}} + \frac{\sin n(r-s)\frac{\theta}{2} \cos (n-1)(r-s)\frac{\theta}{2}}{\sin (r-s)\frac{\theta}{2}}$$

$$= \frac{\sin (r+s)\pi \,.\, \cos (n-1)(r+s)\frac{\pi}{n}}{\sin (r+s)\frac{\pi}{n}} + \frac{\sin (r-s)\pi \,.\, \cos (n-1)(r-s)\frac{\pi}{n}}{\sin (r-s)\frac{\pi}{n}}.$$

The first fraction is always zero, so is the second, unless $r = s$, in which case, however, it is equal to

$$\operatorname*{Lim}_{r=s} \frac{\sin (r-s)\pi}{\sin (r-s)\frac{\pi}{n}} = \operatorname*{Lim}_{\theta=0} \frac{\sin n\theta}{\sin \theta} = n.$$

Thus $S = \frac{n}{2}$ if $r = s$, but $S = 0$ if $r = s$.

**Shells.**—Show that if a triangle of minimum area be circumscribed about an ellipse, the normals at the points of contact meet in a point, and find the equation to its locus.

The triangle of minimum area circumscribed about a circle is an equilateral triangle. The relation between the ellipse and its auxiliary circle shows then that the triangle of minimum area circumscribed about the ellipse touches the ellipse at the points whose eccentric angles are $\alpha$, $\alpha + 120°$, $\alpha + 240°$. Now the condition that the normals at the points whose eccentric angles are $\alpha$, $\beta$, $\gamma$ should meet in a point is

$$\sin (\beta + \gamma) + \sin (\gamma + \alpha) + \sin (\alpha + \beta) = 0.$$

But $\sin (2\alpha + 120°) + \sin (2\alpha + 360°) + \sin (2\alpha + 240°)$

$= \sin (2\alpha + 120°) + \sin (2\alpha + 240°) + \sin 2\alpha$

$= 2 \sin (2\alpha + 180°) \,.\, \cos 60° + \sin 2\alpha$

$= -\sin 2\alpha + \sin 2\alpha = 0,$

which establishes the first part of the proposition. The equations of the normals to the ellipse $x^2/a^2 + y^2/b^2 = 1$ at the points whose eccentric angles are $\alpha$ and $\alpha + 120°$ are

$$ax \sin \alpha - by \cos \alpha = (a^2 - b^2) \sin \alpha \cos \alpha,$$

$$ax \sin (\alpha + 120°) - by \cos (\alpha + 120°) = (a^2 - b^2) \sin (\alpha + 120°) \cos (\alpha + 120°).$$

Thus $ax \sin \alpha - by \cos \alpha = \frac{1}{2}(a^2 - b^2) \sin 2\alpha,$

and

$$(ax \sin \alpha - by \cos \alpha) \cos 120° + (ax \cos \alpha + by \sin \alpha) \sin 120° = \tfrac{1}{2}(a^2 - b^2) \sin (2\alpha + 240°)$$

$$= \tfrac{1}{2}(a^2 - b^2)(\sin 2\alpha \cos 240° + \cos 2\alpha \sin 240°).$$

The latter equation can be written

$$-(ax \sin \alpha - by \cos \alpha) + \sqrt{3}(ax \cos \alpha + by \sin \alpha) = \tfrac{1}{2}(a^2 - b^2)(-\sin 2\alpha - \sqrt{3} \,.\, \cos 2\alpha).$$

Substitute from the former equation, we then get

$$ax \sin \alpha - by \cos \alpha = \tfrac{1}{2}(a^2 - b^2) \sin 2\alpha,$$

$$ax \cos \alpha + by \sin \alpha = -\tfrac{1}{2}(a^2 - b^2) \cos 2\alpha.$$

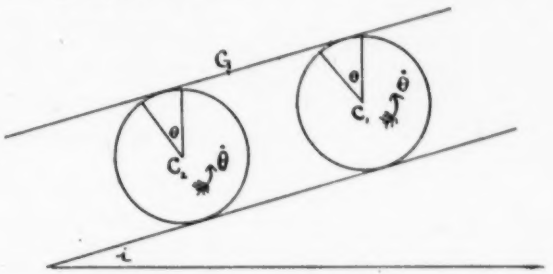
Square each equation and add, thus

$$a^2x^2 + b^2y^2 = \tfrac{1}{4}(a^2 - b^2)^2$$

is the equation of the locus required.

**Bengal.**—Two rough solid cylindrical rollers of radius $a$ and mass M are placed with their axes parallel and horizontal upon a fixed plane inclined at an angle $i$ to the horizontal. A log of mass 2M is laid across the rollers. If there be no slipping between either the log or plane and the rollers, find the acceleration with which the log moves. (B.Sc., London, 1909.)

Since there is no slipping, the velocity of the log at any moment is parallel to the plane and equal to the velocity of either cylinder in the same direction. Let $\theta$ be the angle which a fixed radius of the top cylinder and a parallel fixed radius of the lower cylinder makes with any fixed straight line—for example, a vertical line—at any time and after motion has commenced. In this case the fixed radii are originally vertical.




Each cylinder has moved therefore parallel to the plane a distance $a\theta$, as also has the log. The centre of gravity of each cylinder ($c_1$, $c_2$) and the log (G) have descended therefore a distance $a\theta \sin i$, so that the loss of potential energy is $4Mg \,.\, a\theta \sin i$.

The velocities of these centres of gravity are each $a\dot{\theta}$, and the angular velocity of the cylinders is $\dot{\theta}$.

The gain of kinetic energy is therefore

$$2Ma^2\dot{\theta}^2 + Ma^2\dot{\theta}^2,$$

since the moment of inertia of each of the cylinders about the axis is $\frac{1}{2}Ma^2$.

Hence $3Ma^2\dot{\theta}^2 = 4Mga \sin i\,\theta.$

Differentiate this equation and we get

$$6Ma^2\dot{\theta}\,\ddot{\theta} = 4Mga \sin i\,\dot{\theta},$$

or $$a\ddot{\theta} = \tfrac{2}{3}g \sin i,$$

and this is evidently the required acceleration.

**Duffield.**—Your query was answered in full under the name "D'Arcy" in the December number, 1910.

**Augustus.**—Sum to infinity the series

$$\frac{1}{1+x} + \frac{1}{2} \cdot \frac{1}{1+x^{\frac{1}{2}}} + \frac{1}{4} \cdot \frac{1}{1+x^{\frac{1}{4}}} + \frac{1}{8} \cdot \frac{1}{1+x^{\frac{1}{8}}} + \ldots$$

Euler's theorem proves that

$$\cos \frac{x}{2} \,.\, \cos \frac{x}{2^2} \cos \frac{x}{2^3} \ldots \cos \frac{x}{2^n} = \frac{\sin x}{x},$$

when $n$ approaches infinity.

Take logarithms of each side and differentiate, then

$$\tfrac{1}{2} \tan \frac{x}{2} + \frac{1}{2^2} \tan \frac{x}{2^2} + \frac{1}{2^3} \tan \frac{x}{2^3} + \ldots = \frac{1}{x} - \cot x.$$

Now put $x = iy$ and expand by exponentials, thus

$$\tfrac{1}{2}i \frac{e^{-\frac{y}{2}} - e^{\frac{y}{2}}}{e^{-\frac{y}{2}} + e^{\frac{y}{2}}} + \frac{1}{2^2}i \cdot \frac{e^{-\frac{y}{2^2}} - e^{\frac{y}{2^2}}}{e^{-\frac{y}{2^2}} + e^{\frac{y}{2^2}}} + \ldots = \frac{1}{iy} - i\frac{e^y + e^{-y}}{e^{-y} - e^y}.$$

Hence

$$\tfrac{1}{2} \frac{1 - e^y}{1 + e^y} + \frac{1}{2^2} \frac{1 - e^{\frac{y}{2}}}{1 + e^{\frac{y}{2}}} + \ldots = \frac{1}{y} + \frac{e^{2y} + 1}{1 - e^{2y}}.$$

Again, let $e^y = \sqrt{z}$—that is, $y = \frac{1}{2} \log z$—then

$$\tfrac{1}{2} \cdot \frac{1 - z^{\frac{1}{2}}}{1 + z^{\frac{1}{2}}} + \frac{1}{2^2} \cdot \frac{1 - z^{\frac{1}{4}}}{1 + z^{\frac{1}{4}}} + \ldots = \frac{2}{\log z} + \frac{z+1}{1-z},$$

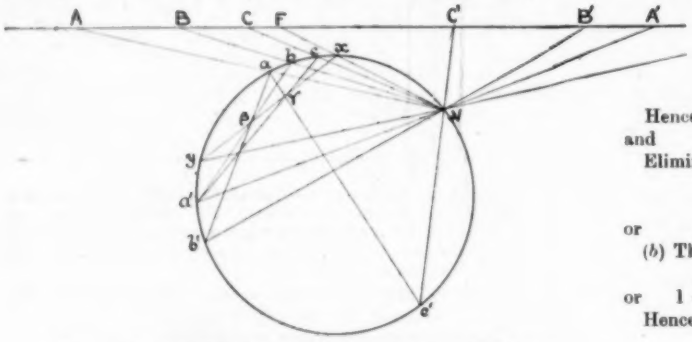
$$\tfrac{1}{2}\left\{\frac{2}{1 + z^{\frac{1}{2}}} - 1\right\} + \frac{1}{2^2}\left\{\frac{2}{1 + z^{\frac{1}{4}}} - 1\right\} + \ldots = \frac{2}{\log z} + \frac{z+1}{1-z}.$$

$$\therefore \frac{1}{1 + z^{\frac{1}{2}}} + \frac{1}{2} \cdot \frac{1}{1 + z^{\frac{1}{4}}} + \ldots - \left\{\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \ldots\right\} = \frac{2}{\log z} + \frac{z+1}{1-z}.$$

$$\therefore \frac{1}{1+z} + \frac{1}{2} \cdot \frac{1}{1 + z^{\frac{1}{2}}} + \frac{1}{4} \cdot \frac{1}{1 + z^{\frac{1}{4}}} + \ldots$$

$$= \frac{1}{\log z} + \frac{z+1}{2(1-z)} + \frac{1}{2} + \frac{1}{1+z}$$
$$= \frac{1}{\log z} + \frac{2}{1-z^2}.$$

**D'Arcy.**—Draw an indefinitely long line $Ox$, and on it take A, B, C such that AB = 3, BC = 2. Take also on it three points A′, B′, C′ such that CC′ = 6, CB′ = 10, and CA′ = 12. It is required to find the position of a point F on $Ox$ such that the cross ratios {ABCF}, {A′B′C′F} shall be the same. Verify your construction by algebraic calculation.




Draw a circle on the plane of the line, take a point V conveniently on it, and let AV, BV, CV, A′V, B′V, C′V cut the circle again at $a$, $b$, $c$, $a'$, $b'$, $c'$. Construct the axis of the ranges on the circle defined by $a$, $b$, $c$ and $a'$, $b'$, $c'$. Thus $ab$, $a'b'$ meet at $\beta$, $ac'$, $a'c$ meet at $\gamma$, then $\beta\gamma$ is the axis. Let it meet $aa'$ at $\alpha$. Let $\beta\gamma$ cut the circle at the points $x$ and $y$, and let $Vx$, $Vy$ cut the given line at F and F′. Then

$$\{ABCF\} = V\{ABCF\} = \{abcx\}$$
$$a'\{abcx\} = \{a\beta\gamma x\}$$
$$= a\{a\beta\gamma x\} = \{a'b'c'x\}$$
$$= V(a'b'c'x) = \{A'B'C'F\},$$

and similarly for F′, so that there are two points on the line such that

$$\{ABCF\} = \{A'B'C'F\}.$$

Algebraically, let AF = $x$; we have by hypothesis

$$\frac{AC \cdot FB}{AF \cdot CB} = \frac{A'C' \cdot FB'}{A'F \cdot C'B'};$$

that is, $$\frac{5(3-x)}{x \cdot (-2)} = \frac{(-6)(15-x)}{(x-17)4};$$

that is, $$5(3-x)(x-17) = 3x(15-x);$$

that is, $$2x^2 - 55x + 255 = 0;$$

that is, $$x = \frac{55 \pm \sqrt{985}}{4}$$
$$= \frac{55 \pm 31 \cdot 4}{4}$$
$$= \frac{86 \cdot 4}{4} \text{ or } \frac{23 \cdot 6}{4}$$
$$= 21 \cdot 6 \text{ or } 5 \cdot 9.$$

The first value corresponds to the point F′, and the second to the point F.

**François.**—(*a*) If $y = (ax^2 + 2bx + c)/(Ax^2 + 2Bx + C)$, show that the maximum and minimum values of $y$ (when such exist) are given by

$$(AC - B^2)y^2 - (Ac + aC - 2Bb)y + (ac - b^2) = 0,$$

and the corresponding values of $x$ by

$$(Ab - aB)x^2 + (Ac - aC)x + (Bc - bC) = 0.$$

(*b*) If $$\frac{1}{(1-x)^2(2-x)(3+x)} = a + bx + cx^2,$$

approximately, when $x$ is so small that its cube and higher powers can be neglected, find the numerical values of $a$, $b$, $c$.
(Board of Education, Honours, 1907.)

(*a*) We have

$$x^2(Ay - a) + 2x(By - b) + Cy - c = 0,$$

so that

$$(Ay - a)x + (By - b) = \pm \sqrt{\{(By - b)^2 - (Ay - a)(Cy - c)\}}.$$

Hence, if $x$ is real,

$(By - b)^2 - (Ay - a)(Cy - c)$ is positive;

that is,

$y^2(B^2 - AC) - y(2Bb - Ac - aC) + b^2 - ac$ is positive.

Suppose this expression is equal to

$$(B^2 - AC)(y - \alpha)(y - \beta).$$

Then, if $B^2 - AC$ is positive, $(y - \alpha)(y - \beta)$ is positive, and if $\alpha > \beta$, $y$ can have any value greater than $\alpha$ or less than $\beta$—that is, there is no maximum or minimum.

If $B^2 - AC$ is negative, $(\alpha - y)(y - \beta)$ is positive, in which case the maximum value of $y$ is $\alpha$ and the minimum value of $y$ is $\beta$.

The values are evidently the roots of the equation

$$(AC - B^2)y^2 - (Ac + aC - 2Bb)y + (ac - b^2) = 0,$$

and in such case

$$(Ay - a)x + By - b = 0,$$

with $$x^2(Ay - a) + 2x(By - b) + Cy - c = 0,$$

give the values of $x$.

Hence $$(Ay - a)x + By - b = 0,$$

and $$(By - b)x + Cy - c = 0.$$

Eliminating $y$, we have

$$\frac{ax + b}{Ax + B} = \frac{bx + c}{Bx + C},$$

or $$x^2(aB - Ab) + x(aC - Ac) + bc - Bc = 0.$$

(*b*) The identity gives us

$$(1 - x)^{-2} = (a + bx + cx^2)(6 - x - x^2),$$

or $$1 + 2x + 3x^2 = 6a + x(6b - a) + x^2(bc - a - b).$$

Hence $$a = \tfrac{1}{6},\ 6b - a = 2,\ bc - a - b = 3.$$

$$\therefore \quad b = \frac{13}{36} \text{ and } C = \frac{127}{216}.$$

**G. B.**—I regret to say I cannot understand the details you give. You do not say whether your drawing is a horizontal or vertical section. Further, a triangular orifice is a hole in the shape of a triangle; your drawing indicates a conical exit.

**Maths.**—A particle bounding on a perfectly elastic horizontal plane describes a series of equal parabolic arcs, the height of each being $h$, and the distance between successive $2b$. Taking the axis of $x$ through the points of impact, and the origin at one of these points, express the equation of the path of the particle by means of a Fourier's series of cosines of multiples of $x$. (Board of Education, St. VII., 1908.)

The equation of the first parabola is

$$y = \frac{h}{b^2}(2bx - x^2),$$

for $y$ is zero when $x = 0$ or $2b$, and is $h$ when $x = b$. This curve is repeated on the positive side of $x$, and $2b$ is the amplitude of the wave.

Fourier's theorem states that

$$y = \frac{h}{2b^3}\int_0^{2b}(2bx - x^2)dx + \frac{h}{b^3}\sum_1^\infty \cos\frac{n\pi x}{b}\int_0^{2b}(2bx - x^2)\cos\frac{n\pi x}{b}\,dx$$
$$+ \frac{h}{b^3}\sum_1^\infty \sin\frac{n\pi x}{b}\int_0^{2b}(2bx - x^2)\sin\frac{n\pi x}{b}\,dx.$$

Now $$\int_0^{2b}(2bx - x^2)\,dx = \Big[bx^2 - \frac{x^3}{3}\Big]_0^{2b} = 4b^3 - \frac{8b^3}{3} = \frac{4}{3}b^3,$$

and

$$\int_0^{2b}(2bx - x^2)\cos\frac{n\pi x}{b}\,dx = \frac{b}{n\pi}\int_0^{2b}(2bx - x^2)\,d\,.\,\sin\frac{n\pi x}{b}\,.\,dx$$
$$= \frac{b}{n\pi}\Big[(2bx - x^2)\sin\frac{n\pi x}{b}\Big]_0^{2b} - \frac{b}{n\pi}\int_0^{2b}(2b - 2x)\sin\frac{n\pi x}{b}\,dx$$
$$= \frac{b^2}{n^2\pi^2}\int_0^{2b}(2b - 2x)\,d\,.\,\cos\frac{n\pi x}{b}\,.\,dx$$
$$= \frac{b^2}{n^2\pi^2}\Big[(2b - 2x)\cos\frac{n\pi x}{b}\Big]_0^{2b} + \frac{b^2}{n^2\pi^2}\int_0^{2b}2\cos\frac{n\pi x}{b}\,dx$$

$$= -\frac{4b^3}{n^2\pi^2} + \frac{2b^2}{n^2\pi^2}\left[\sin\frac{n\pi x}{b}\right]_0^{2b}$$

$$= -\frac{4b^3}{n^2\pi^2}.$$

Again

$$\int_0^{2b}(2bx - x^2)\sin\frac{n\pi x}{b}\,dx = \frac{b}{n\pi}\int_0^{2b}(x^2 - 2bx)\,d\cdot\cos\frac{n\pi x}{b}\cdot dx$$

$$= \frac{b}{n\pi}\left[(x^2 - 2bx)\cos\frac{n\pi x}{b}\right]_0^{2b} - \frac{b}{n\pi}\int_0^{2b}(2x - 2b)\cos\frac{n\pi x}{b}\,dx$$

$$= \frac{b^2}{n^2\pi^2}\int_0^{2b}(2b - 2x)\,d\sin\frac{n\pi x}{b}\cdot dx$$

$$= \frac{b^2}{n^2\pi^2}\left[(2b - 2x)\sin\frac{n\pi x}{b}\right]_0^{2b} + \frac{2b^2}{n^2\pi^2}\int_0^{2b}\sin\frac{n\pi x}{b}\,dx$$

$$= \frac{2b^2}{n^2\pi^2}\left[-\cos\frac{n\pi x}{b}\right]_0^{2b} = 0.$$

Thus $$y = \frac{h}{2b^3}\cdot\frac{4b^3}{3} - \frac{h}{b^3}\sum_1^{\infty}\frac{4b^3}{n^2\pi^2}\cos\frac{n\pi x}{b};$$

that is,

$$y = \frac{2h}{3} - \frac{4h}{\pi^2}\left\{\cos\frac{\pi x}{b} + \frac{1}{2^2}\cos\frac{2\pi x}{b} + \frac{1}{3^2}\cos\frac{3\pi x}{b} + \ldots\right\}.$$

## FRENCH PRIZE COMPETITION.

### Result of the June Competition.

THE prize is awarded to "Isabelle." (Will "Isabelle" kindly forward name and address to the office of the magazine?)

*First Class.*—Paul, S. H. C. J., Teab, Lavalloise, Mendax, L. N. R., Adamson, ——, Crontha, Mergy, Traddles, J. W. M., Essex, Esmond, Julie Fos, Citizen, Post meridiem, Curly, Grimbarian, Majella, X. Y. Z., Hialmar, Corinth, Bunnie, Clio, Perseverance, E. Finette, Jella, Sheba, Sweet memory, Clapham, Rainy, Aberdonian, Carpe diem, Mitis, Sirius.

*Second Class.*—Ibdibski, Wellesley, Camelodunum, Forfar, Nil desperandum, Michael, Sunbeam, Tolstoi, Unique.

The name and address of "Henriette," who gained the prize in the April competition, are: Miss Ransford, 61 Canning Street, Liverpool.

The name and address of "Conor," who was successful in the March competition, are: Miss E. A. Pearse, 119 Hambalt Road, Clapham Park, S.W. The Editor owes Miss Pearse an apology for overlooking a previous letter of hers. Had it not been for this oversight, Miss Pearse's name and address would have appeared last month.

We have yet to hear from "Sapphire," who gained the prize offered in the May number.

### Report.

The chief errors arose from not seeing that *des chaudrons de cuivre*, etc., is a phrase explaining *tous les ustensiles de métal*, and that *paraît-il* is a present and not a past tense.

Those who have taken part in these competitions will notice with regret that with the present issue the *Practical Teacher* comes to an end. It is equally a matter of regret to the Prize Editor, to whom the study of languages has been one of the greatest interests in life, that he will no longer have the privilege of assisting the many earnest and capable men and women who have striven for the prizes offered. Although he has no personal acquaintance with the large number of students who have for many years taken part in these competitions, his thanks are nevertheless due to them for the indulgence they have shown him in the difficult task he has had to perform. In bidding them farewell, he trusts they will remember there is no finality in study; and that while our own language contains many literary masterpieces, the study of the chief works in French literature will afford many enjoyable moments.

### Prize Translation.

We were just about to leave the table. Suddenly, through the French window, closed to protect us from the intolerable heat of the garden, resounded loud cries of "The locusts! the locusts!" My host became quite pale, like a man to whom a disaster is announced, and we all went out hurriedly. For the next ten minutes there was in this habitation, a moment ago so peaceful, a noise of hasty steps, of indistinct voices lost in the bewilderment of awakening. From the shadow of the vestibules, where they were sleeping, the servants darted outside, and beat with sticks, forks, and flails all the metal utensils on which they could lay hands—copper kettles, pans, saucepans. The shepherds blew their sheep horns; others had sea or hunting horns. All this made a frightfully discordant tumult, of which the dominant note was the piercingly shrill "You! you! you!" of the Arab women. It appears that a big noise, a violent vibration of the air often suffices to drive away the locusts, and hinder them from descending. But where then were they, these terrible creatures? In the sky, vibrating with heat, I saw nothing but a cloud appearing on the horizon, copper-coloured and dense like a hail cloud, with the noise of a storm wind in the thousand branches of a forest. It was the locusts. Sustaining each other by their dry, stretched-out wings they flew in a mass, and despite our cries, our efforts, the cloud advanced still, casting over the plain an immense shadow. Soon it was over our heads. For a second one saw an indentation—a tearing of the edges. Like the first stones of a hailstorm several detached themselves—distinct, russet. Then the whole cloud burst, and this hail of insects fell thick and noisily. As far as the eye could see the fields were covered with locusts, enormous locusts, the length of a finger. Then the massacre commenced; hideous sound of crushing, of grinding straw. With harrows, picks, ploughs one turned up this moving soil; and the more one killed the more of them there were.

ISABELLE.

## HOLIDAY HINTS.

THE Belgian State Railway send us an attractive illustrated booklet descriptive of their activity as Continental agents. It is important to note, especially for those who are afraid of the sea passage, that the crossing from Dover to Ostend takes only three hours, and can be undertaken in one of the three new turbine steamers owned by the company with the minimum of discomfort. Many of our readers speak in high praise of the convenience of the Rundreise Ticket System in use by the Belgian State Railway, under which passengers can make up their own itinerary, the cost of which will be supplied on application.

For Continental visitors we can from long experience recommend very heartily the *Queen Book of Travel* issued by the well known periodical. It has, to my knowledge, saved many intending travellers a good deal of anxiety, and ought to find a place in every portmanteau which will be packed next month for the Continent.

# Our Literary Competition.

## THE AWAKENING OF GENIUS.

BY HERBERT LEATHER.

(*Continued from page 851.*)

ONE day, early in the new year, Barbara found herself compelled to accept Finkeltheim's terms.

"Fifty shillinks, mees; here is ze money. I am zorry ze market ees so bad. Now, Meester Leslie has ze most lofely market, and he haf only sell me von all dese winter; but he haf ze artist look, mees. He look ill, and haf leedle to eat; but he haf the genius," rambled on the dealer, with enthusiasm. "If Meester Leslie lif, he shall do ze work which zazzles, vhat ve call ze top of ze ladder."

"Is he very ill?" asked Barbara tremulously.

"Ze man of genius always haf an ill look," was the oracular reply.

* * * * * * *

Brushing away the untasted tea with an impatient touch, the artist turned on the light, and proceeded energetically with his work.

"Fifteen years of wasted life!" he muttered. "Fool! you might have enriched the world by fifteen masterpieces. You might by now have had the happiest home in the world, but for your cursed inertness! Good God!" he exclaimed, in a sudden spasm of fury, "even the love of an angel could not turn you from your folly! Work, fool, work! This cloud must be finished to-night. Already it has taken three days, and there is so much yet to do!—How hateful mists are!—so suggestive of human strife and misery."

With unerring hand the piece of canvas was covered almost to his satisfaction. A glow of ecstasy lighted up his flushed face as he admired the effect of a few cunning strokes with an artist's pride.

"I wonder if Barbara will be pleased?" he pondered. "Not the subject, but the work. If only I could know that she were happy! How hot the room is! Those were heavenly days at Castles Bay. How lovely it would be to catch the wind once again coming straight from the sea! Bah! this is a wretched daub; there is no truth in that cloud—out with it!

"Knocking again! Come in!"

"Mr. Leslie, you have not touched your tea, and it is long past eleven now. Do have some supper."

"Yes; leave it there, Mrs. Jones. I *must* finish this piece of work."

"I don't leave the room until you have taken this soup."

"What a trouble you women are! There, there—good-night!

"Twelve o'clock! Now I can work.

"I wonder if Barbara has had a hard day. Had I not been such a dreamer she might have been here now to inspire me—it is so hard at times.

"Work on! Fifteen years of wasted life!

"How cold it grows! Mind your trembling does not spoil your strokes, fool!

"Three months of toil, night and day, and the work still unfinished! How long will it take to recover fifteen wasted years?

"Three o'clock! What! Your eyes are heavy! You would sleep! No! Work on!

"How real that sea looks! It is moving!

"What is the matter? Fool! What are you doing on the floor?

"You are tired?

"Up again to work!

"Work! work! work!"

* * * * * *

View day. Blount, the great critic, in company with a few choice spirits, had made a preliminary survey of the exhibits. By common consent they returned to one of the lower rooms, and paused before a remarkable picture, of which the background consisted of a driving mist dimly enveloping sky, sea, and rocks. The foreground was a little more clear, showing a long, narrow strip of sand and a white line of dull foam. A woman, with head half averted, had just withdrawn her hand from the farewell greeting, and was in such a position that she could not see the face of her companion, which was turned towards her. His expression held such a concentrated degree of agony that it arrested and fascinated the attention. A few sprays of fleecy cloud, detached from the upper masses, floated between the two, suggesting the impression that the whole mist would shortly fall, and extinguish them completely from view.

The group round the picture gradually became a crowd, and for once there was tense silence in a view day throng. The quibbles of experts concerning shade and perspectives, form and expression, were notably lacking. Veterans in art looked at it long and earnestly, left it, and returned. Eyes of cynics glowed strangely, and, meeting the glances of their fellows, expressed but one thought—"genius."

Blount voiced the common sentiment when discussing the picture with his particular friend at a later hour. "It is the work of a lifetime."

From the particular circles where high art was worshipped, the success of the wonderful picture was spread by every journal in the country. The newspapers were full of it.

And, strangely enough, it was whilst feasting upon the generous notices of Gordon's success that Barbara received the first intimation of his manner of life since their parting. Then she learned from a friend of Gordon's that after the completion of his picture the artist had utterly collapsed, and at present was in the critical condition following a prolonged period of high fever.

"Take me to him at once," said Barbara, with a white face, preparing for the journey.

Few words were spoken until they reached the room of the artist, where they met Finkeltheim coming away.

"It is noding of use, mees; he has painted ze picture with his life. I haf tried to cheer heem up with ze orders for pictures—but no, nod again vill Meester Leslie crack ees leedle joke with ze ole Finkeltheim. It ees hard on ze poy after zo many years, mees; it ees hard."

Here the poor old fellow broke down completely, and retreated hastily, using his handkerchief vociferously.

Then Barbara found herself alone once more with the man she loved. He was dozing.

Strange that she dared not go to him!

On the table near him lay a pile of unopened letters and telegrams. There was one exception, which Bar-

bara unconsciously took up and read. It was from a former president of the Academy, whom she remembered as Gordon's tutor in days gone by, and ran: "My dear boy, your picture is wonderful, and will have great renown. We are all hoping to see a companion to it—without the mists."

"Without the mists," she thought dully. "Would they ever rise now?" Mechanically, in the subdued light, Barbara began to see more clearly the sketches on the walls, inspecting them idly in turn.

Yes, they were all there—the sketches she had sold at various times to Finkeltheim. In her emotion she could have sobbed aloud, had not that silent form forbade. With outward calm she approached him.

That could not be Gordon?—that hand?—those sharp chiselled features, furrowed with suffering, were not her boy's? "Oh, no, no, no!" she shuddered. Why, he did not breathe. Not dead!

Surely—not dead?

She could have shrieked in terror.

Then his eyes slowly opened, the lips moved.

"Babs?"

"Yes, dear, I am here."

"Have—you—seen—it?" he asked feebly.

"Yes, Gordon; it is——" Her lips quivered, and refused to say more.

"Babs! Your—hand."

She took his poor weak hands in her young strong ones.

After a pause he rambled on: "I have been a long time. Mists—take them away—I can't paint them," he ended plaintively.

"Babs? Do—you—love—me?"

"Yes, dear, I have always loved my Gordon;" and in spite of her bravest efforts, the tears rained from her eyes upon his hands.

"Do not speak any more," she whispered at last.

"Kiss—me—Babs. I—did—it—for—you."

She bent down and kissed his brow reverently.

"Hold—my—hands—closely," he pleaded, with the peaceful smile of a child.

Then he fell into a sound, dreamless sleep.

The long hours of the night gave way to the gray dawn, the dawn to a brilliant noon; yet still she sat with his hands steadily clasped in hers; for had not the straining-point passed at last?

## SUMMER HOLIDAYS AND COOK'S.

THIS is the title of the new and very attractive holiday programme issued by the famous firm of travel agents founded by Thomas Cook. This substantial publication numbers 160 pages, and is arranged very conveniently for would-be travellers who have already settled upon the holiday spot and wish to find out how to get there with a minimum of trouble. Those who are looking for an answer to the urgent question, Where shall we go? will find the charming pictures in this programme a veritable bait. Opening the book at random we find a beautiful picture of Killarney, and we feel that for us the matter is settled.

> "I will arise and go now, for always, night and day,
> I hear lake-water lapping, with low sounds by the shore,
> When I stand on the roadway, or on the pavements gray,
> I hear it in the deep heart's core."

There you are! Our holiday place is settled. If you get Cook's programme you will come to a conclusion just as readily.

## THE FOUNDLING.

BY ROBERT HUDSON.

LITTLE Paddy Ryan was certainly the handsomest, and, by reason of his sunny temper, the best-loved lad in all Lisconnel. His foster-mother, poor, plain Judy Ryan, simply adored him, and had done so ever since the night, now ten years ago, when she had picked him up, a baby of only two or three months, hidden in the dykeside by the common.

"Ye'll put him back where ye found him, ye omadhaun," her father had said. "Ye'll make wag every tongue in Lisconnel."

Judy's gray eyes had flashed. "Let them wag!" she said with scorn. "Shure, if it's the bit bite and sup ye grudge, Micky and I will find them."

And then the mite had spoken for himself in baby fashion, turning his eyes on the old man and smiling at him. From that moment the old turf-cutter had been his slave, for months going about in fear and trembling lest Paddy's parents should appear and claim him.

But the baby might have dropped from the clouds, for nothing was ever heard of father or mother; and at last people seemed to have forgotten about his having been found, and always spoke of him as "Judy's babby."

The ten years which had made Paddy a sturdy lad had brought changes to the little cabin. The old man had died, and now the wedding-day of Judy and Micky O'Callaghan drew near.

"It's to be a grand weddin'!" said Mrs. Driscoll to her neighbour, Mrs. O'Shea. "Paddy's just been tellin' me there's a pound of tay laid in, and two pounds of the best butter, no less, forbye jam and suchlike."

"Shure, it's Judy deserves it," answered Mrs. O'Shea; "though she might have done betther than Micky, poor boy, with his game foot," she added thoughtfully.

"Sorra a bit of it, Mrs. O'Shea," Mrs. Driscoll maintained stoutly. "They've grown up together; and it's Judy has always stuck up for Micky—the poor gossoon couldn't stick up for himself."

"He hadn't a fair chance," conceded Mrs. O'Shea, relenting; "but he'll do finely now he's got the job to drive ould Lecky's car."

When the morning came, Micky and Judy and Paddy drove the two miles to church in Lecky's car, lent for the occasion, many of their neighbours walking across country to witness the ceremony. The kindly old Father made Micky and Judy man and wife, and gave them his blessing; and they returned in a dream of happiness to the little old cabin.

"It's welcome ye are to your own house, Mrs. O'Callaghan," said Mrs. O'Shea, pressing eagerly forward to get the first kiss from the bride. "I've made the tay, and everything's ready."

"Kape your hands aff the sugar, Paddy, ye limb of unrest," said Mrs. Driscoll, aiming a playful blow at the bright-eyed gossoon, which he avoided by ducking, laughing merrily.

Then Micky and Judy were seated at the head of the table, and the guests down the sides; and the fun waxed fast and furious till, when night came, Mrs. Driscoll declared that there had never been a wedding like Judy's in Lisconnel.

"We've a start against the world, Judy darlin'," said Micky, as he closed the door after the last guest. "There's two golden sovereigns into your hand, and there's a bag of meal and rashers of bacon in the cup-

board. I brought them in and hid them there before we started for church."

"There's better than that, Micky," yelled Paddy, dancing wildly about. "Show him the things in the big box, Judy."

Her eyes shining with delight, Judy dragged the big wooden box into the middle of the floor.

"Shure, Micky, it's a proud day for us," she laughed. "Paddy bought this elegant glass with money he got for scarin' the crows for Farmer Blaney;" and she held up a small hanging mirror framed in bright red wood.

"It's a good lad he is entirely," said Micky.

"And here's a pictur' of Queen Victoria," went on Judy. "The housekeeper at the Hall gave it me, along with the kettle and half-a-dozen tay-spoons."

"And the chiney figures, Judy," said Paddy; "the chiney figures for the chimley, and the bit mat for the fireside."

"It's the luckiest couple we are in all ould Ireland," said Micky fervently. "Here's wishin', darlin', that the luck may never change," he ended, kissing the glowing face turned up to his—a face which, at that moment, transfigured as it was with happiness, no one could have called plain.

For two short and happy years all went well, and Micky and Judy were spoken of as the happiest couple in Lisconnel. Then times changed. Old Lecky died and his cars were sold, and Micky was left without work. The winter was long and hard, and at last Micky was laid low with rheumatic fever. Judy nursed him tenderly through it, but he was left a wreck, with limbs twisted and almost useless.

"I'll never be able to work a day's work again, Judy," he moaned, as she helped him for the first time over to the window. "My legs won't carry me even acrass the floor; and the docthor says I'll—I'll——"

"The docthor's a fool, then," broke in Judy fiercely. "Who's he to say ye'll always be crippled. If looking afther ye will do it, ye'll soon be as straight as any of the boys, in spite of the docthor."

"Och, Judy, alanna," said Micky, trying to smile, "I never was that same. Ye forget my stumpy leg."

But Judy ran outside the cabin, that Micky might not see her eyes.

After that Judy had to work for all three, leaving Micky to Paddy's care; for the doctor said he was not yet strong enough to be left alone. But some of the brightness had gone from her eyes, and some of the lightness from her step.

At the best of times it is hard for a woman to find work, and in Lisconnel it was hard indeed; and at last the time came when Judy herself ailed, and was forced to stay at home with Micky.

"It's big and strong I am, Judy," said Paddy one morning, when he had discovered her crying quietly behind the cabin. "I'll soon pick up work of some kind, alanna—folks is rare and sorry for you and Micky."

But in a small place, where all are poor, it is next to impossible for a boy of twelve to earn sufficient money to support three people; and in spite of the genuine kindliness of their neighbours, who helped them to the extent of their power, hunger became well known in the little cabin. Paddy's fresh colour faded, and his cheeks grew thinner; but he always seemed blithe and hopeful.

"I'm thinking, Judy," said Mrs. Driscoll one day, "that Paddy's not Irish at all, at all; nothin' seems to sadden the purty face of him. Shure, I think he must belong to some of they French folk, that's always smilin'. My ould man has book-l'arnin'——"

"Och, just listen to that, now," said Driscoll himself, putting in his head at the open door. "I said he was a sunbeam, the spalpeen—and so he is," glaring fiercely round the cabin as if he dared any one to contradict him. "All the folks in Lisconnel's cheerful enough when there's praties to eat, or mayhap a drop of the crather to drink; but when they're wantin', we've naught to say—except Paddy; and begorra, he's still the life of us all. It's always the smile he has for everybody."

"Ye're right, Mr. Driscoll," said Judy tremulously. "I never remember Paddy crying, even when he was a babby."

But they were wrong. Sorrow was touching Paddy deeply; but he was one of those who fight their battles in secret, suffering a hundredfold that their loved ones may never guess.

At last affairs became so desperate that Paddy determined to do what to one of his nature was a terribly humiliating thing—to beg for help at the big Hall, seven miles from Lisconnel, standing amid the beautiful woods at the foot of the mountains.

"The master's a Saxon, so they say; but good to folk if they'll let him," he said to himself. "I'll tell him about Micky and Judy, and ask him for work of some kind—shure, it would be a sthrange thing entirely if he hadn't some job for a handy spalpeen like myself, so it would."

He started late in the afternoon, hoping to get back before dark. He was surprised to find that he could not step out so bravely as formerly, and that he soon became very weary. He had eaten nothing all day, pretending to Judy that he could easily pick up a meal among the neighbours, so that she and Micky might have the more.

As he trudged along, all sorts of wild, impossible schemes passed through his brain, and for the time he was unmindful of his surroundings. The road entered the wood, and ran along by the side of the mountain. It was cool and dim under the great trees, and Paddy took off his cap and fanned his heated face. Just then his bare foot struck against a stone, and he fell forward upon his hands and knees. He was so weary that he did not rise at once, but crawled across to the gnarled root of an old oak, and seated himself upon it, resting his back against its mossy trunk. Feeling something in his hand, he opened it idly and half-sleepily. In his fall he had clutched a handful of shamrock and had held it unconsciously. Suddenly he uttered a glad shout, his weariness gone for the moment as he realized that amongst the shamrock was one with four leaves.

"If I'd been lookin' for the darlin'," he murmured, "it's myself would never have found that same. Och, Judy, mavourneen! Shure, 'tis yourself would be sayin' the luck had come at last."

As he sat with the shamrock pressed to his lips, his head nodded, and he was just about to rouse himself and go on when some one said quite close to his elbow, "You're quite right, Paddy; the luck has come at last."

Paddy turned with a start, and saw at his elbow a lovely little lady, so small that she reached hardly above his knee. She laughed out in her silvery voice at his expression of surprise.

"It's dreaming you were, Paddy," she said. "We've tired of waiting for you, so I've come out to ask you

to step in through our door;" and she pointed to a big archway in the side of the mountain.

"But," said Paddy, as soon as he could speak for amazement, "I never saw that opening in the mountain before, nor the pile of rocks beside it with the lovely light over them, at all, at all."

"You shall see more than that, Paddy," said the little lady. "Come!"

Still tightly clasping his shamrock, Paddy followed her through the opening, which immediately closed behind them. Then he stood still and gazed and gazed at the loveliness before him, as if he could never gaze enough. A sigh of contentment broke from him.

"You like our land, then, Paddy?" asked the fairy—for such he now knew she must be. "You will like to stay and watch our dance, won't you?"

"Och, shure, and it's myself would like to do that same; but Judy will be wondherin' what's become of me," Paddy answered wistfully.

"Never mind that; we'll look after Judy for you," said the fairy gaily, as she waved a wand over his head. "Tell me what you see," she asked.

"Shure, how can I?" replied Paddy, drawing a long breath. "It's lovely beyond all words. I'll try, though. I see, far back, big mountains—so big that they look as if they were touchin' the sky itself; and, standin' on the low rocks of them and under all the trees, I can see nothin' but banks and banks of flowers—harebells and bluebells, shaking themselves to and fro."

"Flowers, Paddy!" exclaimed the fairy, laughing so merrily that he was compelled to laugh too, though he did not know what she was laughing at. "They are the fairies of the mountain, Paddy, and I am their queen. See! They are stepping down from the rocks, and coming into the glade. We have a very special reason for our merry-making to-day."

Paddy now saw that what he had in the distance mistaken for banks of wild flowers was really a great host of fairies dressed in charming costumes of every shade of blue, and with hoods shaped like the blossoms they were intended to represent.

"Come, Paddy!" said the Fairy Queen. "If you never danced in your life before you must dance to-day."

Paddy needed no urging. For the moment he was the Paddy of old—his whole, gay, bright nature aflame with the merry, tinkling music of the flower-bells, which swung to and fro in the strangest, sweetest melody as the fairies moved in their graceful dance.

"It's me that's achin' to begin," said the boy, his blue eyes shining, and his whole body quivering with the wonderful charm of the music. He darted into the fairy ring, and began to dance with a vigour and abandon that surprised the little folk. Some even forgot to dance as they watched him. His toes seemed to go like lightning as he swept from side to side of the ring.

"To and fro, to and fro,
Ring, sweet bells, so soft and low!
Swells your music on the air,
As you swing your petals fair.

"In and out, in and out,
Here we dance with merry shout;
Tripping lightly o'er the ground
To your happy, silvery sound.

"Clear and sweet, clear and sweet,
Echo's notes your tinklings meet;
From the hill-side calling, till
All the dell your sweet notes fill."

Over and over, again and again, the fairies sang this song to the tinkling of their bells, till at last Paddy grew tired of the words and their unchanging melody.

"I'm thinking ye might change the tune," he said, looking doubtfully at the Fairy Queen.

"But, Paddy," she answered, "that is just what we cannot do; we know no other song."

"Och, only one!" exclaimed Paddy. "I'll give ye another this very minute, so I will."

Standing in the middle of the ring, he sang in a clear voice a song he had thought out little by little to amuse Judy and Micky in the long evenings of winter.

"Och, shure, and it's Paddy's the broth of a boy
To dance on the velvety green;
For, certainly, never a blithesomer foot
In all County Galway was seen.

"Is it reels, or break-downs, or a rale Irish jig,
That ye're askin' for, darlin' asthore?
Mavourneen! We'll stand up the purtiest pair
That ever put foot to the floor!

"We'll dance till the daylight creeps in at the door,
And the fiddler has broken his strings;
For, faith! it's the music has got in my feet;
And yours, shure, they seem to have wings!"

Completely out of breath, Paddy stopped and looked at the ring of smiling faces.

"It is a lovely song, Paddy," said the Fairy Queen, coming forward till she was close to him. "We will never forget it; and, as a reward, you shall choose one of the boxes in the 'Rainbow Room' of my palace."

Turning to the other fairies she commanded them to follow, and taking Paddy's hand, led the way through the glade towards an opening in one of the surrounding hills, from which came a rich crimson glow, like the vivid light of the sunset. Passing through, Paddy saw before him a palace built entirely of crystal. Above the open doorway hung one huge opal cut in the shape of a bell, and it was the red sheen from the heart of this jewel which lit up all around it.

"This is the 'Rainbow Room,' Paddy," said the Queen, drawing aside a curtain of primrose-coloured silk, and revealing a long room of dazzling beauty. "How do you like it?"

"It's grand!" answered Paddy. "Shure, it is well named; it has all the colours of the rainbow, and the table is of solid gold, and so are some of the boxes on it."

"Those are the gift boxes, Paddy," laughed the Queen. "Come nearer, and take one of them."

Paddy walked gingerly over the polished floor with his bare feet, and stood for some time looking at the boxes, hardly daring yet to believe in his wonderful luck.

"Which ever shall I choose?" he muttered to himself. "If I take a gold one, Judy will say it was selfish to take the best—and the silver ones have diamonds set on them, and must be worth a terrible lot, so they must. I think I'll take the black one with the little pearls on it."

"I knew you would choose that one, Paddy," said the Queen, as she lifted it from the table. Taking a golden key from one of the fairies, she handed both to Paddy.

"Now," she said, "in that box is your fortune; but you must not open it till you are at home. You are a very lucky boy."

"It's very kind ye have been to me," Paddy said, his voice quivering. "Judy and Micky and I will never forget it. If ye're ever needin' a new tune or a new dance, it's myself will be proud to give ye that same."

"Good-bye, then, Paddy, till we need you again," said the fairy, waving her wand.

The next moment Paddy felt some one shaking him by the shoulder, and looked up sleepily. He was still sitting on the gnarled root of the old oak, and the sun had gone down, leaving the wood dim and chilly.

"Are ye Paddy Ryan, little boy?" a girl's voice asked. "Wake up, sleepysides!"

"Yes, it's Paddy Ryan I am, ochone!" said poor Paddy, rising to his feet, and looking round him sorrowfully. The forest-covered side of the mountain was unbroken; no trace remained of the fairy archway. "But it would close again, so it would," he murmured hopefully. Looking round in search of his box, he saw it in the hands of the girl who had roused him, and stretched out his hand for it.

"It's my box you've got," he said, with a bright smile.

"However can you tell that?" asked the girl in the greatest surprise. "If it's Paddy Ryan you are, the box is yours; for the old mistress said I was to give it into your own hands with the little gold key. But it's me that's puzzled to know how you knew it."

"Your misthress?" asked the boy, still half-dazed with sleep. "Are you a fairy?"

The girl laughed merrily. "It's asleep you are still," she said, her laughter breaking out afresh as she saw his look of bewilderment. "I'm Eileen O'Rourke, and sorra a bit of a fairy. The old mistress is dying," she said, more gravely, "and it's on her soul that she's got your box; but she's a Saxon, and could not tell the priest. It's me she asked to bring it to you when I took up her gruel this morning. 'Tell him to take it to the lawyer-man in Galway,' she said. So it's you that's got your box from Eileen, the Fairy Queen."

She stood laughing for a time at the boy's perplexed face; and then, nodding brightly at him, turned and went away again up the wood, her merry laughter trilling out at intervals, ever fainter and fainter.

"It's my box, it is, bedad!" mused Paddy, tucking it under one arm, and beginning to move homeward. "But what she means by the 'old mistress,' and how she got it out of my fist after the Fairy Queen gave it me, it's myself can't make head or tail of. Whatever will Judy and Micky say when I show it them?"

The thought galvanised him into activity. Setting off at his best pace, he never rested till he reached the cabin. Bursting in, he cut a caper in the middle of the floor, to the great amazement of the two poor invalids.

"There ye are, Judy!" he shouted, placing the box on the table. "And here's the golden key! Nobody but yerself shall open it. Hurroo!"

"Whatever's wrong wid ye, Paddy?" asked Judy in alarm. "Where have ye got that box?" The look of fear in her eyes sobered Paddy in an instant.

"It's all right it is, Judy," he said more calmly. "The fairies gave it me. Open it quick, mavourneen! Then I'll be tellin' ye all the story."

With trembling hand Judy fitted the key to the lock, while Micky and Paddy looked over her shoulders.

"Ochone! ochone! it's full of dirthy papers!" wailed Paddy. "To think they'd be after playin' me a thrick like that!"

"Whisht, Paddy!" said Micky, reaching his hand over Judy's shoulder, and taking the sheaf of papers. "Wait till I read them."

As he spoke, Judy lifted the last paper of all, and disclosed a layer of golden coins in neat piles at the bottom of the box.

"Shure, now, I knew the fairies wouldn't be after cheatin' a poor gossoon like that, bedad!" yelled Paddy, his eyes dancing with delight, while poor Judy sat with the tears of joy rolling down her pale cheeks.

"It's cowld and hunger that ye've given the go-by to to-day, Paddy," she whispered, as Paddy hugged and petted her. Then her first thought returned, and she started up in terror.

"Where did ye get it, Paddy?" she whispered fearfully.

Micky's voice broke in before Paddy could reply.

"It's all right, Judy, alanna," he almost shouted. "This paper says that our Paddy's the rale owner of Castle Arran; and he has to take all the papers to the lawyer-man in Galway, and that is all he has to do. All the proofs of it are in the box. Ye always said, Judy, that he came of good people—and this shows ye were right, so it does. Our Paddy's the son of ould Lord Arran, with as good blood as the best in Ould Ireland, so he is."

"But, Micky, it's dhreamin' ye must be! How could I find him in the dykeside, a bit babby, if he was the son of Lord Arran?"

"It's stolen he was, Judy, mavourneen! And the papers tell who it was stole him, and put a dead baby in his place to spite the old man; bad scran to them!"

There was a moment of tense silence, and then Paddy made them both sit down, for they were faint with weakness and surprise.

> "And it's we three will live in a castle," he sang,
> "And ride in a coach and four;
> And never again will the hunger and cold
> Come knockin' so loud at the door."

Verse failed to express all he would say. "We'll have the grandest docthor for Micky, and silk gowns for you, Judy—and, oh! the times we shall have in helpin' those that are cold and hungry, so we shall!"

All that Paddy said came true; the lawyers accepted the papers as correct, and the old walls of Castle Arran rang once more with songs and laughter.

When Paddy grew up to be a man and an ornament to Old Ireland, his friends often wondered at seeing, under a glass shade in the corner of the great library, a large box, decorated with seed pearls, on the top of which lay a sprig of withered shamrock. No one on earth could possibly make Paddy believe that they were anything but fairy gifts, and Judy is just as positive.

## THE CONSTRUCTIVE MOVEMENT.

**Messrs. Schofield and Sims have issued in book form the "New Course of Practical and Constructive Work" by Messrs. Pickles and Grange which has formed one of the most helpful, attractive, and suggestive series of articles ever issued in the pages of this journal. The new publication is presented in a very attractive manner, the books for both pupils and teachers being printed in large, clear type on excellent paper, and provided with a sufficiency of useful diagrams. The introduction interests us greatly, for the authors forecast very cleverly those important changes in the curriculum which have for their object the simplifying of school work in the literary section. This change will leave more room for that manual work which is to permeate the whole of scholastic effort. Mr. Pickles is now, happily for education, more free to devote himself to this entrancing subject, and the *Practical Teacher* in retirement will look to him for a lead.**

# The Recollections.

BY TABINO-HITO.

TO-DAY, February 11, on which I write, is the 2571 St. Kigensetsu, or the anniversary of the origin of Japan. To-day can be seen the flag of the rising sun on every house-top in Japan, whether it be the busiest streets in Tokio, or remotest hermit village. To-day school children, clothed in their best in honour of the great day, attend school to salute the glorious flag; to listen to the message of their beloved Mikado; and to sing the National Anthem. This, indeed, is the proudest day for the sons of Nippon.

Though I have been a wanderer for many years in both hemispheres, I have seldom failed to celebrate this day with my compatriots.

But this is a very strange Kigensetsu for me. I am lying in a bed of a nursing home far away from busy towns, where more than a half of my life has been spent. I do not hear the voices of my friends, and see no enthusiasm around me. Nothing breaks the silence but the steps of nurses walking in the corridor. Am I dreaming? Am I the same who was once so ambitious, so eager to learn, so enthusiastic to work and to attain? Ah, it must be the same self, for not as a fading dream do I see the memories of the past, but lifelike as in a picture that is placed before me.

On the slopes of a far-away hill, called Takizaka, or Cascade Hill, there stands a cottage from whose windows one can see thousands of irrigated rice fields, stretching miles and miles, with small streams between them. Beyond the fields runs the wild river Bando-taro, the pride of the province, reflecting the brilliant rays of the sun. Above the river stands the beautifully-shaped mountain Komochi, that has many scattered villages in its bosom. Far to the north lie the lofty peaks of Mikuni, covered with eternal snow. This extensive view from the Cascade Hill is said to be one of the finest in the prefecture of Gunma. Yet visitors often said that they loved more the near surroundings of the cottage. On elevated ground a few yards from the cottage stands a shrine of goddess Benten, shadowed by old cherry trees and surrounded by a moat. How beautiful it looked when the sweet-scented flowers were in full bloom! Across the road is a ravine hundreds of feet deep, dotted with small waterfalls. There the pretty white Ume blooms, and plants of all kinds grow lavishly on the slope. Thousands of our best poems have been sung in praise of the Ume-no-hana, which blooms in the coldest season of the year, while the snow is yet on the ground, and scatters its fragrance. Not only by men but by the queen of feathered singers Uguisu (Warbler?) are its flowers loved and reverenced. The Uguisu and Ume-no-hana are so closely associated in our poetry and drawing that the name of one immediately calls up the image of the other. A visitor to the cottage, or one approaching the hill in the early morning, could not fail to hear the sweet song of the bird, "Ho-ho-ho-ho-hoke-io."

The master of the cottage is about sixty years of age, and a veteran of commerce and trade. In his youth, gentlemen with two swords despised business; yet seeing that Japan must become a commercial nation sooner or later, he dropped his swords to become a trader, and ventured to deal with foreigners, in spite of the Shogun's edict.

There are two amusing relics in my brother's house. The one is a tremendous sword, six feet long, which was made by my grandfather to drive "the foreign devils" from the shore of Nippon; while the other was an old photograph of my father in his old-fashioned dress, taken with his European friends—photography was considered as a magic of the devil at the period the picture was taken. It is interesting to see the son was making friends with Europeans and studying the Western science at a port his father was wielding the long sword to fight with them. Yet such were the two contending spirits of the time.

When Japan was forced to open her ports to the Europeans, as my father had foreseen, he launched out into foreign trade with still greater zeal. He prospered and was looked up to as a leader of the Island Empire. Later, however, fortune did not favour him, and whilst his pioneer friends became magnates of the world of finance, he lost his vast fortune. He bore his defeat cheerfully, and like a true sportsman as he was, he retired to the quiet hillside, there to enjoy his last days. He took his devoted wife and his two youngest children—myself, the youngest of his five sons, and my sister, the youngest of three daughters.

When I look back at those days which I spent at the Cascade Hills, they seem to be the happiest period of my life. On sunny spring days my sister and I gathered water-cresses in the clear brooks, picked wild rhubarb by their banks, or made small gardens in the yard. On hot summer days I swam in the River Tone with children of my own age, or fished in the pond. On bright days in autumn I joined farmers' children in the rice fields, and played with straws, gathered chestnuts in the woods, or plucked persimmons in the orchards. And on cold winter days I sat with my sister and our parents round the brazier. How my parents laughed when my sister related some amusing story! How delighted we were to hear stories of heroes and heroines. Sometimes I indulged myself for hours and hours reading the "Shobun-gaku," a series of fairy tales. How well I remember the stories I read in those days!

Yet those happy days were soon over. I began to think of my future at an age when many other boys are still careless at their playthings. Soon I realised that my only education was to be that of an elementary school, though my nephew, who was but by two years my junior, was sent to a middle school at the provincial capital. I looked at him with envy when he came back to his home during a summer holiday, clad in the uniform of his school. I suspected that I might eventually be adopted by a family in which there was no son to succeed. But I scorned the idea, for to be adopted by an heiress's family in Japan means forfeiting for ever one's family name and crest—becoming the "consort" of his wife, and the "foreman" of his parents-in-law. "Do not be adopted, even by the family of an heiress," says an old proverb, "if you have so much as three handfuls of grains." In spite of this warning, many young men in Japan are compelled to humiliate themselves in this fashion, for the authority of parents and elders over youngsters is so strong that often the will of the latter becomes invalid. I could not subject myself to this ordeal. I felt I must act

before it was too late. I fled to a city and became a clerk in a printing house, with a salary of 24 cents, or 6d. a day. On this income I managed to keep myself during nearly a year, but seeing that there was hardly any prospect for the future, I definitely decided to sail for America in order to educate myself. I managed to borrow a few pounds from friends for this purpose, and returned to my home in the winter of 1899 to say farewell to my parents.

At that time my father was very ill, and had been forced to remove from the cottage to his ancestral manor house, which was then under the control of my brother, and not far from the Cascade Hills.

My eldest brother was a stern man, and I feared him. Perhaps the responsibility of restoring the fortune of our house had made him so; he was a man of few words, and in the House of Legislature of his prefecture they nicknamed him "the silent member." He was, however, respected by his friends at the capital and by the tenants on his estate.

My return to the ancestral home was hailed by my parents, who thought that I had come back to stay with them and be their comforter. Seeing their rejoicing, how could I unfold my plans, which would sadden them more than ever? My courage failed; yet I must tell my mother, if not my father, to whom a sudden shock might be fatal. So I disclosed the motive of my unexpected return, and asked for my mother's consent. Seeing that nothing could alter my determination, she gave in.

The morning on which I had to part from my dear parents came. My mother left the room in which my sick father lay. I bowed my head silently while she spoke a few words of blessing and wept. She had bravely suffered much in her life. Yet to see her youngest boy depart for an unknown country, without saying farewell to his helpless father, was too much to bear. Leaving my mother, I sought my brother. I found him standing in the garden, and said farewell as politely as it is required of a younger brother in addressing the eldest, thanking him with bows for his past kindness. He nodded, and went away without a word; he was as cold and stern as ever. This made me unhappy, yet what could I expect from him, against whose will, perhaps, I was leaving my parental home?

The morning was cold, and it was snowing fast as I stepped outside the gate, followed by none, not even one of my brother's servants. I walked a few yards, and then turned back. There was no one there, and dropping the heavy parcels I carried from my shoulders, I again faced the house, bidding good-bye to my father and asking his forgiveness. Then I went my way in the piercing wind and snow. I had twelve miles to walk in deep snow before reaching the next village, in which I had a cousin who was a pawnbroker, and from whom I wished to borrow 5 yen, or 10s. She handed me the sum while I took off my overcoat and gave it to her in return, the whole transaction being completed in silence. Yokohama was still eighty miles away; but what did I care about my overcoat now that I had my passage money for America at last!

One of my brothers lived at Yokohama; and, although he had inherited nothing, he took the entire responsibility of educating his younger brothers and sisters. Had I asked him to send me to a middle school, and even to college, he would have done so, even had it meant reducing his private expenditure by a half. Yet how could I, then a grown-up boy, allow him to bear this burden? The course I had chosen was the best, the only one to satisfy my pride and save further trouble to my brothers. My decision made me glad as the meeting with my warm-hearted brother approached. He was awaiting me at the station. He made me enter his jinrikisha, and took me to his college. Seeing that I looked shabby and cold, he clothed me in one of his suits, and gave me an overcoat and shoes. "No longer dost thou look like a monkey from the country," he, smiling, said, as I appeared neatly dressed.

The day for my departure arrived; and, going to the wharf with my brother and his colleague, I was surprised to see a gathering of my brother's students. The boy who only a few days before had left his eldest brother's house so lonesomely was now to be sent off by so many dignified college students with cheers. This also, perhaps, had been pre-arranged by my ever-thoughtful brother, whose wish was to soften the bitterness of my departure.

Years have come and gone since I saw these two brothers in Japan. At the time when I left Japan I could not understand the character of my eldest brother, who was always reserved and silent. I thought him cold, harsh, and self-centred. Now I see him as he really is—kind and true, and love him as much as the other. In the hour of my distress he has sent me his son to be my companion and helper. What more can one brother do for another?

I was a steerage passenger in a small freight vessel, and found my room, or cubicle rather, among boxes and bales. It was so small and narrow that I could hardly move in it. But to a boy who has never seen anything better, the cubicle seemed comfortable enough. Besides, all thoughts were absorbed by the happy reflection that I was actually sailing to America as the pioneer of my province.

From the deck I could see Fujiyama, though not in its pure whiteness, for the sun was sinking behind it. Nevertheless, this lofty peak, clad in purplish gray, was sufficiently inspiring, and I could not help singing that song of a youth departing from his home.

"Never shall I see thee again, O my beloved land!
Till my task is accomplished and my name is made.
Death comes in the struggle to win the battle of fame,
Let my bones be buried in the green mountain of distant land,
For why should the ancestral tomb be my only place of rest?"

Soon night came and I went to rest, rolled up in my blanket. How I dreamed of my home that night, the next, and many a night following! Why did I, who had left this home for years, never perhaps to return, hover round my home at nights? Perhaps my parents also imagined that I was with them, only to realise on waking in the morning that I was sailing far, far away.

How glad I was when the two stormy weeks' voyage was over, and the vessel was entering beautiful Puget Sound. I greeted the majestic Tacoma Mountain with delight. Soon the vessel was approaching the port of Seattle, then the fastest-growing town of the Great West. I looked at the glittering towers, spires, and gigantic buildings with enthusiasm. The place at which I had arrived was not a desert as I had anticipated, but a great city in which all the adventurous spirits of the wide world were gathered together.

Before being allowed to land, I was obliged to undergo a stiff and rather humiliating examination at the hands of a doctor and an official. I had to show not only my passport, but also $25, to show that I was not indigent. All these trials I passed through safely, and was glad

to leave the ship and hurry straightway to an employment bureau.

Imagine what a comic position it was for a young man who could only speak a few words of English! I was abused by boys in the street and fooled by storekeepers.

Fortunately, I could not understand their rude words till I had repeated them to my more learned compatriots. The day after my arrival I was hired as a houseworker by a teacher, who was hardly able to pay me anything, but who proposed himself willing to send me to a night school. Under these grand circumstances I was hired, and now I felt my position secure as an honourable houseworker. There was now no need of the $25 that I had borrowed from a friend in order to show to the immigration official, and so I sent them back at once to Japan. That evening I found myself in a night school, and thus without delay I was able to begin to realise my cherished dream.

Thirteen years have gone since I have started my life as a houseworker in America. I have led an interesting life, full of struggles, successes and failures. Yet now, as I look at my dear mother's portrait on this Kigensitsu morning, all my thoughts go back to the days of my childhood and the time of my departure from home. I seem to see my dear mother sitting by the window before the Sacred Book, uttering softly her ardent prayer to her trusting God for her son's safe return.

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# Leaves from a Rural's Log.

## III.—AN ARCADIAN PROBLEM.

BY W. FRANCIS RANKINE.

ONE would never suspect that we in Arcady were concerned with serious problems. To the townsman Arcady is a shrine of solitude to which he, in his leisure hours, may repair, for here is to be found an atmosphere of peaceful content, approaching at times to lulling idleness, which misleads the judgment. The stranger within our gates never suspects the eddies of opposed opinions, the centres of social activity, and the complex problems that exist beneath the semblance of a pleasing peace. So when again from the hilltop you enjoy the great panorama of our woodlands and heaths, our squares of pastures and ploughlands around our fading thatches, know that your exclamatory "What a peaceful spot!" is but the recognised formal tribute of the townsman to the outward beauty of country spaces.

For within our midst are problems as diverse and bewildering as they are difficult. They form the weft of our social fabric upon which we weave the pattern of our daily life, often with unskilled hands, so that a frequent ugliness creeps into the design. Some problems are merely personal matters—peculiarities accidental to temperament and circumstance—while others affect our village economy.

Daniel Welfare is a hill farmer, and if you are desirous of coming into close contact with real hardships hill-farming will show you the way. He is a splendid type of the sturdy pioneer who for years has battled with the soil and the elements on the outposts, as it were, of cultivation, and a hard frontier fight it has been at the best; for on the hills the soil is thin and the wind beats down with pitiless force in its season, and, after all is told, only the sheep can batten on the hill slopes. It calls for a stout heart and a sound body up there on the bare uplands, and there's little to be got out of the hungry, meagre soil.

Yet a finer race of farming men you never meet than these hill farmers, who are hard-muscled, ruggedly honest, thrifty, and steady, and as little untouched by the tide of modern ideas as were their forefathers, who broke the upland heaths and forest spaces two hundred years ago. Thus their chief inheritance consists of a sturdy character, combined with a stubborn clinging to old-time ways. They differ from the farmers of the vales, where the soil is deep and rich—stolen, in fact, from the hills by the rains—where the lush grass bottoms lie, where the beasts fatten comfortably, and money is steadily made.

There is a delightful country freshness about Farmer Welfare that in all probability would not satisfy urban taste. It is always a pleasure to meet him, for he seems to carry with him the free atmosphere of the hills on which he lives. In manner and speech, in wisdom and philosophy, he bears the stamp of the Nature-taught soul.

Occasion frequently entices me into the neighbourhood of the Hanger Farm where Welfare lives, since from there you can see for miles towards the blue line of the northern hills, while there are spinneys and heaths where uncommon birds move in seclusion, and, in their season, some of our rarest butterflies haunt the bramble blossom and thistle heads which always flourish even when the oats are short in the straw. Thus to-day I found myself with my terrier companion enjoying the newly-found freedom of a rare May day in the Ten Acre—the broad sidling field which borders the lower side of the Hanger Farm—when I espied Welfare emerging from the farmyard.

"Marnin' to 'ee, maister," shouts the farmer lustily, as he strides along a big furrow to gain my path. "What a right fine marnin' it be, to be sure. 'Ee be come just right time to see the sheep—just about a proper lot they be too, this season. And we've got some of them funny stoans for 'ee. Ploughman found 'em when 'e was stitchin' the land o' Nod; they be by the door of the big barn, but I thinks they be only ord'nry stoans me'self."

It is due to explain that "them funny stoans" are flint implements—arrow-heads, spear-heads, scrapers, drills, and a hundred and one different forms of prehistoric tools—which are turned up at every ploughing on the upland fields. Sometimes a coin of the Roman Empire is discovered, and now and again a horse-shoe of a curious pattern that defies the wit of our village smith to assign a period to its forging except, indefinitely, that "it baint 'xactly like what we use nowadays." Goodness only knows what history the old hill fields can boast! "Stitchin' the land o' Nod" is a phrase which would baffle many, and yet it only means ridging by means of the plough the field that goes by the Scriptural description of its remoteness from Welfare's farm.

"Well," I say after the weather prospects have been duly appreciated, "how is young Grimutt getting on?"

"Gettin' on? Why, he be gone—couldn't put up wi' 'e any longer, so I sacked 'un last Saturday," replies Welfare. "I met 'un," he continues, "comin' into the yard at eight o'clock as asy-like as if 'twere six, so I axed 'un where 'e be goin'. Said 'e were goin' to work, ord'nry like. 'Goin' to work,' ses I; 'not for me ye baint goin' to work at this time o' marnin'.' So there and then I sacked 'un, and right down glad I be to get rid o' 'un."

This comes as a shock to me, for young Grimutt obtained work on Welfare's farm through my recommendation. He is a lad who has left school these three years, but unfortunately this short period has been taken up with sporadic jobbing and loafing. In the first phase of his post-school days he haunted the golf links, where his earnings were precarious yet lucrative. Then he obtained work where knife-cleaning, coal-hauling, bicycle-cleaning and odd jobbing were necessary. Thus he progressed from place to place, always shunning real honest labour in the fields, yet often earning more shillings a week than he was really worth. So at seventeen he was as far from a life occupation as he was at fourteen. Worse than all, he had acquired a name for indolence which in country eyes is a character most undesirable. A man may lapse from the moralities in a dozen ways in the country, but if he follows his daily toil with honesty little is counted wrong with him. If he lapses from labour he is considered a pariah.

Thus it came to pass that no one would think a second time about engaging young Grimutt, for wherever he sought work, as was his wont at times, his name had gone before him and spoiled him. At this critical time in his history Welfare, strengthened by my speaking, offered to try the young wastrel, with the idea of making him a ploughman and carter on the Hanger Farm.

At the best it is a weary work saving these youths from the whirlpool of loafing, and Welfare's account of his personal experience with the stripling only confirms the stories which have followed Jim Grimutt's progress from one situation to another.

Says Welfare: "'E was allus late o' marnin's till I got downright sick o' axin' 'un to be early. 'E never groomed 'is 'orse, never tended the fodder, and when I thought 'e was at plough in the land o' Nod, I found 'un out by the chestnut spinney a-ferretin' for rabbits. 'E smoked cigarettes in the stables, and when the carter told 'un to lave off, 'e cheeked 'un to rights. Wherever he was sent some one 'ad to follow to see what 'e were up to. It cost me 'alf a crown for every shillin's worth o' work 'e did for me. Now 'e's gone, and I caint think," concludes the farmer with emphasis, "what the young 'uns be a-comin' to."

"What do you think will become of him?" I inquire, with misgivings as to the lad's future.

"If 'e doan't go for a sodger 'e'll be a poacher, and a right down good 'un too, for 'e allus carries a ferret in one pocket, and a settin' o' rabbit snares in 'tother; leastways 'e did when 'e was workin' 'ere. 'E'll get into prison before 'e's finished, and before long too," Welfare replies.

He continues: "When I were a boy there warn't no cigarettes, and the boys had to work as hard as the men. There warn't no schools in them days, and as soon as a boy were big enough to be handy, he went straight into the fields. There warn't no loafers then, I can tell 'ee, and if 'ee didn't keep purty close to 'uns job, the farmers handled 'ee purty quick. I minds the time when the carters used to thrash the ploughboys wi' whips for not baitin' the horses and sich-like, and I've been routed me'self for not turnin' out o' marnin's.'

"Well," I say, "I am sorry our venture has turned out so unhappily. I suppose all the farms are shut against young Grimutt now? I am surprised he did not take to his father's work."

"Well, maister," answers the farmer, "it be no good a-wurritin' about sich lads. 'Ee got me to give the lad work for 'un's good, I know; but I knew from the farst he were a wrong 'un; I've sin 'is like afore now. Bless me soul, 'ed never take to his father's callin'; thatchin' be far too 'ard work for 'un, and there's lots more like 'un. And there'll be lots more yet if they kape 'un in school till they're fourteen. Why, bless ye, they ought to be in the fields then, if they're goin' at all. What's the use o' wurritin' 'em wi' book larnin' when they've got to arn their livin' at dung-cart and plough? If they will kape 'un at school, tache 'un summat that'll be useful arterwards. That's what I ses, and that's what I'll allus stick to."

"But," I expostulate, "don't you think that education will make their lives happier?"

"Yes, but not too much of it, maister. Eddication be right and proper, but doan't let 'un get dissatisfied wi' field work. As long as there's fields and sheep, and sich-like, there must be men to look arter 'em. What's the good o' larnin' 'em anything if it doan't 'elp 'em to arn a livin'? I larnt to work in the school they sent me to."

"How old were you when you left school?" I ask jokingly.

Welfare laughs good-humouredly, for we both know that he has never entered a school except perhaps to register his vote at elections.

"Why, bless me soul, maister, I never left school, to be sure; but it warn't no book school. It were a work school, where they taught 'ee to use your 'ands. I larnt to mow and thatch, to clane a ditch and plash a 'edge and to thresh wi' the flails; and back-achin' work it were, I can tell 'ee. I caint read no sense—not like a scholard like—but I can set out the lands for plough, and I can measure 'un. I can tell 'ee the weight o' a beast within 'alf a score, and I can tell 'ee the value o' 'un, and ye caint larn that in books, can 'ee?"

By the big barn are the "funny stoans" which stimulate my curiosity. They are turned over, and prove to contain some fine specimens of neolithic working. Welfare, I am firmly convinced, sympathises with my regard for these old-time relics—the oldest we can show you in Arcady—and as I commit them to my pocket the old farmer smiles. He himself would attach infinitely more importance to a rusted ploughshare or a few links of a trace chain than to the most valuable arrow-head.

I turn homewards down the hill, across fields now gloriously green, over stiles of awkward architecture, and into the elm-arched lane, now fresher and far more beautiful than it will be again this year. With the problem of Jim Grimutt uppermost in my mind, I muse through the lane while Tiger, the terrier, continuing the quest that began in his puppy days, carries on an absorbing inquiry at every well-known hole in the fern-

draped banks. Soon the problem of the loafer generalises itself into a problem that affects our village youth. How can we bridge the gulf that divides the school from the working life? My mind travels home to my bookshelf, on which rests a well-thumbed blue pamphlet—a memorandum purporting to dispel for all time the haze that for so long has clouded our village teaching. But it brings no salve to the Grimutt evil. The soil is the soil and work is work, and so long as the one continues to call for the other, there must be hand labour. Codes cannot save Jim Grimutt now.

Presently at the lane end, which abuts near the Elm Tree Inn—the cynosure of a beer-loving ancestry—I espy the subject of my thoughts leaning composedly against the sign-post. His cap is set rakishly awry, and a coloured kerchief carelessly adorns his neck. With hands deeply thrust into pockets, he is the embodiment of unwholesome indolence. He is the unmistakable type of the drifting hobbledehoy which is a product of our day that would have found little sympathy in Welfare's youth, for instance. And I fear inwardly as I gaze upon him that others such as he are leaning on posts other than this, the ingenuous director of the stranger's way. I have seen this Grimutt kind before drifting out on the slow suck of the ruthless, hungry tide to utter uselessness, until they became hopeless derelicts, a menace even in our peaceful waters. The scamped task, the neglected job, the ribaldry of the nightly moot, the incipient swilling in the reeking atmosphere of the inn taproom, the night raiding of the game preserves, the loss of personal pride, and then the county gaol—these are the fated steps of the descension to the pit of Forlorn Hope.

As I pass him he utters a knowing, half-sullen, half-kindly salute. No doubt some shame of his recent failure is fresh with him. In his "Good-evenin'" I fancy I detect a tinge of resentment that I had essayed to curb some of his early naughtiness. Nevertheless here he is, leaning on the sign-post, foreshadowing the nature of his life to come, apprenticing himself to an indefinite period of parasitism upon a society which, with a little effort, he might have graced.

As I passed through the fence and stepped into the sanctuary of my garden, I tried once more to alight upon the cause of the Grimutt evil. "Am I the culprit in the inefficiency of past days?" "Is it the home, or is the system, my inexorable horizon?"

## HISTORY FROM ORIGINAL SOURCES.

Messrs. Black are publishing a series of volumes at 2s. 6d. entitled *English History illustrated from Original Sources*. Part I., which has to do with the period up to 1066, is before us, and if it is a fair sample of the series, there can be no hesitation in recommending that it should be supplied to every teacher of history.

The publishers claim that "the extracts are taken from contemporary authors, or are themselves contemporary documents, and have been chosen to illustrate, as fairly and as vividly as possible, the really important events of the period, and to explain the motives of the chief actors." This claim is very fully justified. Cæsar's *Commentaries*, *The Life of Agricola* by Tacitus, Bede's *Ecclesiastical History*, *The Anglo-Saxon Chronicle*, and *The Song of Beowulf* are among the many contemporary sources which are utilised, and a most entertaining and helpful volume results.

## FIREWORKS! OR, SCIENCE IN THE ELEMENTARY SCHOOLS.

BY J. S. DAVIS, M.A.

WHY all this display? Why these flames and coloured lights? Why the great number of poppings and burstings? Why these fireworks? The answer of the teacher will generally be that this is done for vividness—for the sake of effect—that children will not "take to" science lessons unless they are interested by these and such-like means. Is this really so? Cannot the children be interested in some other way? In the interests of true education the school curriculum would be far better off without this "vividness." Certainly the school work should be made vivid—the children should be interested, and to a certain extent amused, but this kind of firework display should not be labelled "science."

Should science be included in the curriculum of the primary school? If taught on the right lines, the almost universal answer would be "Yes," even by those who are not disciples of Herbert Spencer. The teacher must himself realise the value of scientific training, or he can never be a good teacher of science, or—it is not too much to say—of any subject. Spencer in his *Education* discusses the bearing of knowledge on earning a livelihood, on health, on art, etc., and in every case he gives the answer that the knowledge which is of most worth is science. Well, one need not be too one-sided and relegate all other subjects of instruction into the background; but it behoves the teacher to consider the bearing which science has upon life and culture, and to consider also the methods of teaching the subject so that it shall make the greatest appeal to the pupils who will be interested without the display of fireworks.

Now, children are possessed of great curiosity; they love to experiment; they are charmed with machinery. This is the universal case with all children, and especially with boys. Watch a boy as he plays with a mechanical toy—see how he will "pull it to pieces" just to find out how it "works"; notice how he will try to set it together again and make it "go." This, doubtless, is sometimes annoying to the parent, but it is indicative of an inquiring mind. If for no other reason, these characteristics of childhood claim a scientific training. "We hope to see this curious, imitative, restless child grow into a man, who, without losing his childish activity and eagerness, shall have gained the power of sustained and systematic thought." *

Dr. Thomas Arnold's advice—"Let the child learn by doing"—applies to science as much as, if not more than, to any subject. There is no doubt that children learn best by doing. The teacher of science must follow this advice, and not talk to the children out of books. Sir John Lubbock says that "to teach scientific subjects through reading lessons is the worst way in which they could be taught." Science lessons should be made living, and they cannot be commenced too early. "Science is a valuable part of education, not only from its practical utility, and its appeal to so many living interests, but also as an important element in general culture." †

It is not the *what* but the *how*. This is especially applicable to science teaching in our schools. Our aim

* P. A. Barnett: *Teaching and Organisation.*
† J. H. Badley: *Broad Lines in Science Teaching.*

must be not to make our children botanists, chemists, or physicists, but, by carefully instilling into them the habit of inquiry, to make them independent investigators. Great and accurate attainments in science are here unnecessary. A scientific *training* is wanted, not a mass of facts to remember. Method is all-important —method of observation, experiment, and inference. Call it by what name you like, this is true scientific method, and the chief value of science in school is to give a training in this scientific method. Barnett, in his *Common Sense in Education* (chap. ix.), says that "the observation of phenomena, the vigilant detection of results and their accurate measurement, are just what experimental science provides." Our science teaching must not be peculiar to the laboratory or classroom. It must illustrate the work of daily life, and children should, if possible, be trained to realise this.

There can be no doubt as to the value of scientific training as a mental discipline. The training in accuracy and in observation is invaluable. "The result of all our science teaching should be to give, not the conceit of knowledge, but an intellectual humility that recognises that all we can know and do does but open up fresh horizons of the limitless unknown." *

This, then, is the spirit in which the subject should be attacked. To be able to teach science successfully on these lines, the teacher must himself be an investigator. He should devise and perform little experiments to satisfy his own curiosity. This spirit of scientific training must be in him before he can hope to direct and develop the similar spirit in children. Children must be trained to observe, to think, and to inquire.

Now the question is, "What science is the teacher to teach?" Science of common things, science of every-day life, that is what is wanted. It is of very little use to give lessons in magnetism and electricity —that is, to teach the electroscope, electrometer, induction, etc. Electricity and magnetism as *forces* in Nature might with advantage be taught; but, as said before, our aim must be to enable children to *think scientifically*. A teacher who has this spirit will soon be able to draw up a scheme of elementary science lessons—lessons which will be useful and interesting to the child, and which the child will be able to carry into his after-school life. There should be plenty of exercise in measurements of length, area, volume, etc., and in all cases the teacher should train the children's power of "estimation." To quote from the *Suggestions to Teachers*, issued by the Board of Education: "Physical teaching should be restricted to the investigation of the simplest phenomena, as far as possible by the children themselves. Materials and appliances should be of the simplest pattern, but should be used with the utmost care and thoroughness. A few experiments, well chosen and completely executed, will promote accuracy of expression and clearness of inference more certainly than a fuller series insufficiently carried out."

One might ask: "Is it necessary for a teacher such as depicted above to be a scientist in the ordinary acceptance of that word?" No, certainly not; but he must be possessed of common sense. When experimenting before the children, he can easily assume the attitude of an investigator; he can learn with the children; he can give the children the idea that he too is trying to find out something; and yet at the same time he has his superior knowledge and power of experience in reserve. Great scientific knowledge on the part of the teacher is not required, but a teacher will be wise in not meddling with apparatus, and chemicals especially, about which he has no knowledge. Above all, do not let children meddle with and experiment with chemicals about which you yourself are ignorant. In the science apparatus cupboard see that every bottle is plainly and accurately labelled; allow no unlabelled bottle to remain amongst the apparatus; and, above all, keep the key of that cupboard in your own possession. In the *Regulations relating to Laboratories and Science Rooms*, issued by the London County Council, will be found these two very important ones:—

1. When the laboratory is in use, an adult teacher must always be in charge.

2. All bottles containing dangerous chemicals should be distinctly marked.

It may be argued that in most primary schools where science is taught at all, no laboratory or science room proper exists, and therefore this advice is unnecessary. But it does apply to the smallest school cupboard containing chemicals; and if these regulations were attended to, as common sense dictates, such incidents as the following would not occur. The writer recently visited an elementary school where he saw some boys experimenting with test-tubes and chemicals. Free access was allowed to the chemical cupboard, with the result that instead of boiling acid in the tube, the boys had filled their test-tubes with liquid from an unlabelled bottle, and were performing the dangerous experiment of boiling turpentine. An accident such as might have resulted from this would "kill" all interest in scientific inquiry on the part of the boys.

The spirit in which the work should be done having been acquired, and the course of lessons having been planned, there are a few details in the actual delivery of the lesson to which the young teacher should attend. In the first place, every experiment which is to be performed should be previously well practised by the teacher. This applies to the simplest of experiments. Do not rely upon the apparatus being in good order; do not take for granted that the experiment is bound to "come off." All the material needed for the lesson must be collected and tested. The teacher will do well to give the lesson *in camera*—to go through the performance of the experiment just as it will be done in class. If the experiment is to be successful it must be rehearsed beforehand; it is fatal to rehearse it before the class. Unless this is done, the inexperienced teacher is bound to show awkwardness in handling the apparatus—bound to lose some effectiveness.

If sufficient apparatus is available, the best plan is to allow each child to perform the experiment for himself, under the personal supervision of the teacher. This is perhaps the ideal plan, but it is not always possible. If only one set of apparatus is obtainable, then the experiment must be done for the class, and in the presence of *all* the class. But even here a teacher should call out one or two children to help him in the performance of the experiment, or to do the whole operation under the teacher's guidance. Care must be taken that the children doing the experiment are facing the class, and are in such a position that every member of the class can see clearly what is going on.

When the teacher performs the experiment himself, he must avoid turning the lesson into one of information only. It is a mistake to tell the class exactly how the apparatus will be used and what will result. If

* *Broad Lines in Science Teaching.*

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this is done, then the teacher had better put the apparatus away—the lesson is over! The children now know what should take place, for the teacher has told them. But, unfortunately for the teacher, that which should happen does not always occur. The teacher tells the class that he is going to heat this or rub that, then he will do so and so, and as a result this will happen. He applies heat, or he uses friction; he does this and he does that; and then comes the great climax!—the expected does not happen. What is the teacher then to do? What has happened to the simple faith of the children in the teacher's words? Now, when performing an experiment for the class, show the apparatus, make each child watch what is done with it, and tell the teacher what observations he has made—relate in his own words what has happened. The experiment may not be successful at the first attempt. It should then be performed again; and, if it still persists in being "awkward," there is nothing left but for the teacher to tell the class what should have happened. There must arrive a time when the teacher must *tell* something, but the mistake in science lessons is to commence with this telling instead of setting the children to observe and find out for themselves. A careful teacher will avoid experiments which are likely to "play pranks;" and, of course, much of this danger will be averted by a careful preparation and rehearsal before the lesson is given.

The results of all experiments must be recorded. The children may be called upon to record orally what has been done and what has happened, or they may be required to commit this to writing, or the teacher may himself write upon the blackboard the results of his experiments. Generally speaking, these results are best written in three columns, labelled: (1) experiment, (2) observation, (3) inference. This applies to such experiments as would be taken with young children, but the writer does not recommend its being slavishly adhered to, especially in the upper classes. There is then a danger of the notes becoming stereotyped, which kills all interest, and renders note-making valueless. But no experiment should be allowed to pass without expression being given to it. This is of vital importance. Without it science teaching loses all its mental training. Children should always be required to express orally their observations and inferences, and in the upper classes they should commit these to writing. In written accounts the children should be trained to avoid technical terms as much as possible. They should use the plainest words; and the teacher, too, must use the plainest words, for then, and then only, can he avoid his meaning being mistaken.

Finally, the wise teacher will remember the golden rule: "Never tell the children anything which they can find out for themselves."

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*In the Master's Country: A Geographical Aid to the Study of the Life of Christ. By Martha Tarbell, Ph.D. (Hodder and Stoughton. New York: George H. Doran Company.)*

This little book will be found useful by Sunday-school and other teachers. It contains a brief summary of the life of Christ, followed by a detailed account of the geography of Palestine, with maps and illustrations, and accompanied by questions and exercises. Written for use in America, the comparisons as to area are useless for the English teacher, but in spite of this drawback much in the work will be found valuable.

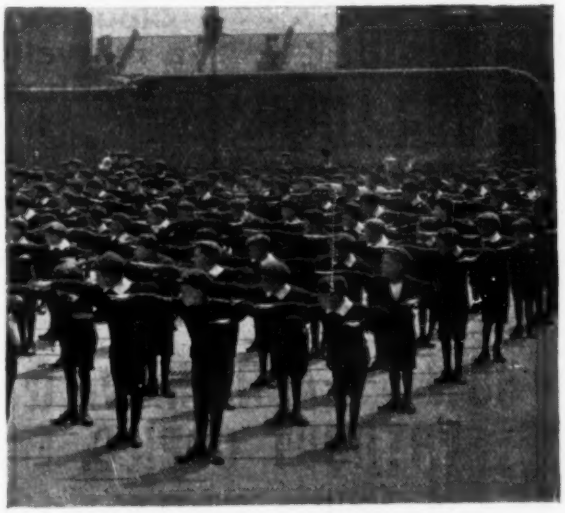
## SCHOOL DRILL.

BY A. WASEY, CANN HALL SCHOOL, LEYTON.

THOUGH physical training has been a compulsory subject for elementary schools for some years, it cannot be urged with any degree of truth that the matter has so far been treated with the seriousness it deserves.

Happily, the Board of Education is now fully alive to the necessity for systematic physical training on common-sense lines; and as educationists generally are beginning to regard the subject as one of national importance, it is obvious that teachers can no longer afford to treat the matter with indifference.

Many readers of the *Practical Teacher* will remember the much-abused "Model Course" of 1902, which, in spite of its barrack-yard terms, contained much that was useful. The 1904 Syllabus was, of course, an immense improvement; but the *Syllabus of Physical Exercises for Public Elementary Schools, 1909*," is undoubtedly far and away the best work of its kind



MASSED DRILL: STANDARDS IV. TO VII.
Alternate arm flinging, with head turning, in trunk forward bend position.

ever issued. With its carefully arranged tables of exercises, its excellent photographs, its chapters on the principles of physical education, and its description of suitable playground games, it is indeed a marvellous ninepennyworth, and should be in the hands of every school teacher.

Through the establishment of physical training classes, by the county councils and other educational authorities, much good is bound to result, for it is well-nigh impossible for any teacher who has had no previous training to master a new system by mere reading.

The possession of a school hall is certainly an advantage, but not an absolute necessity for the successful teaching of physical exercises. To obtain the maximum benefit, the training should be mainly carried out in the open air. When, through stress of weather, this is impossible, the hall should be used; but on such occasions it is advisable to omit such exercises as running and lunging, which fill the air with particles of dust, and so make the respiratory exercises (an essential

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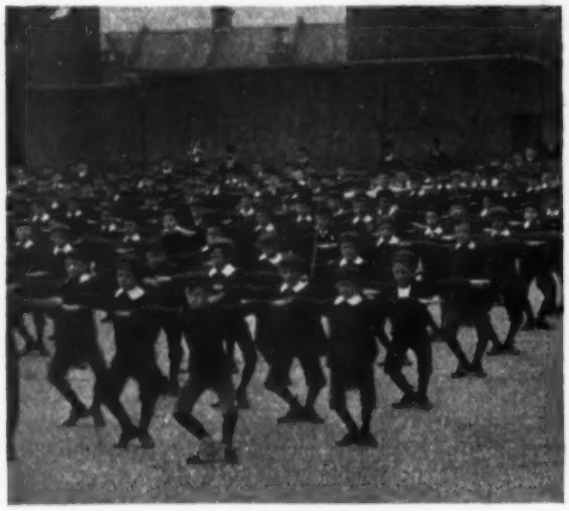
part of every drill lesson) injurious rather than beneficial.

Ten or fifteen minutes daily is much to be preferred to, say, two half-hour lessons per week. The difficulty of arranging for nine or ten classes to use the



MASSED DRILL: STANDARDS IV. TO VII.
Knee bending, with arms sideways raising.

hall or playground at different times in the course of each and every day can be surmounted by amalgamating classes. Standards I., II., and III. could form the junior group; Standards IV. and V. the intermediate; and Standards VI. and VII. the senior group. Where there is sufficient room, two or more groups could be drilling at the same time. Where space is limited, arrangements could be made for one or two groups to take drill immediately prior to the recreation interval, and the remainder directly after. In some schools even larger groups have been taught with marked success. The accompanying photographs represent upwards of three hundred boys of Standards IV., V., VI., and VII. taking a "ten-minute" lesson. The same teacher instructs each class separately in a thirty-minute lesson once a week.

The drill instructor must be patient and painstaking, and must beware of getting along too fast. As much variety as possible should be introduced into each lesson, for undue repetition makes the work distasteful to the children, while the exercise becomes a mere mechanical reproduction, and thereby loses its value both physically and mentally.

Every drill lesson should open with a few preliminary movements, such as: hips firm, neck rest, marking time, feet closing, heel raising, arm bending, arm raising, and foot placings. Such combinations as feet close and neck rest, heel raising and arm raising, foot placing with hips firm, and foot placing with arm bending are of even greater value. Then should follow exercises of a "corrective" character. Knee bending, head and trunk turning and bending are good examples of this type.

In all of these preliminaries, smartness, precision, and correct carriage are absolutely essential, for all the more difficult exercises are built up on these elementary positions and movements.

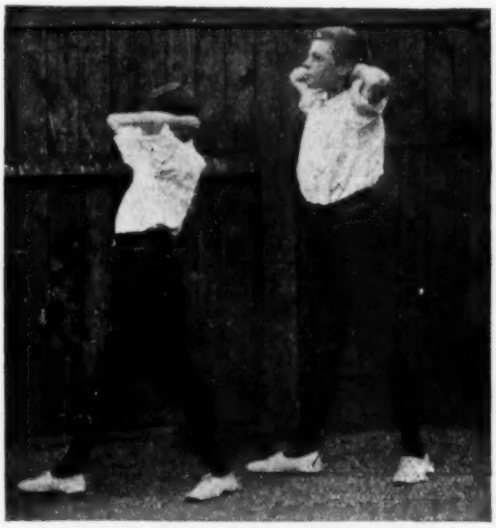
As the majority of exercises are taken from the standing position, it is necessary that the correct attitude of "attention" should be understood. It is insufficient that the scholars are standing in straight lines looking to the front with arms by the sides. Each must maintain an erect position, with the eyes fixed on some object straight ahead at the correct level, the chin slightly drawn, the chest more prominent than the abdomen, the arms perfectly straight at the sides, and, not least important, the weight of the body mainly on the forepart of the feet, which, with heels touching, should form an angle of 60°. The position is one of alertness and expectancy. When "dressed" in line, it should be possible to raise the arms forward without touching one's neighbour on either side.

*Heel raising* is an excellent exercise for correcting the tendency to flat-footedness, and should be taken, as a rule, slowly, with the knees straight, the heels touching, and the body erect. Heel raising may also be taken in conjunction with "feet astride" and "forward" or "outward" placing.

*Marking time* is another most useful exercise, the thigh, knee, ankle, and instep all being employed. As the children generally evince a desire to hurry, the movement should be taken somewhat slowly at first. The erect position of the body must be maintained (rolling being a common fault), the knees bent slightly outwards, the heel leaving the ground first; while in the descending movement the toe first meets the ground.

*Arm raising* forward, forward and upward, sideways, and sideways and upward, are best taken in slow time, but no harm will be done by occasionally performing them in quick time. Whatever the rate, the arms must always be fully extended, fingers and thumb straight and touching.

*Foot placings.*—In the whole of these movements



FOOT FORWARD PLACE, WITH NECK REST.

| *Incorrect Position.* | *Correct Position.* |
|---|---|
| Head drooping, elbows forward, body carried back. | Head erect, elbows back in line with shoulders, weight of body on both feet. |

the weight of the body must be equally distributed between the two feet. Often one notices the foot pushed forward or outward and the body held back.

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For outward placing, the feet should be opened to an angle of 90°.

In forward and outward placing the knee of the moving leg should be slightly bent, the heel raised and the instep arched, so enabling the toe to meet the ground first. In the return the heel is raised slightly before the foot is brought back to its original position. Keeping the weight of the body chiefly on the rear leg and dragging the foot (through not raising the heel) in the return movement are the commonest faults in foot-placing exercises.

*Respiratory exercises.*—The importance of respiratory exercises cannot be over-estimated, for of all essentials to life oxygen is the most important. Full use of the lungs means strength. Throughout the animal world the stronger the creature the more slowly and deeply it breathes. An interesting illustration is afforded by the mouse breathing 150 times and the elephant breathing six times per minute.

As the rate of respiration varies with individuals, the children should not be expected to perform these exercises with the same regularity that is required in other movements. The necessity for nasal breathing must be continually impressed on the children, not only in the "breathing" exercises, but throughout the physical training lesson. Commands must be delivered clearly, smoothly, and deliberately, as few words as possible being employed.

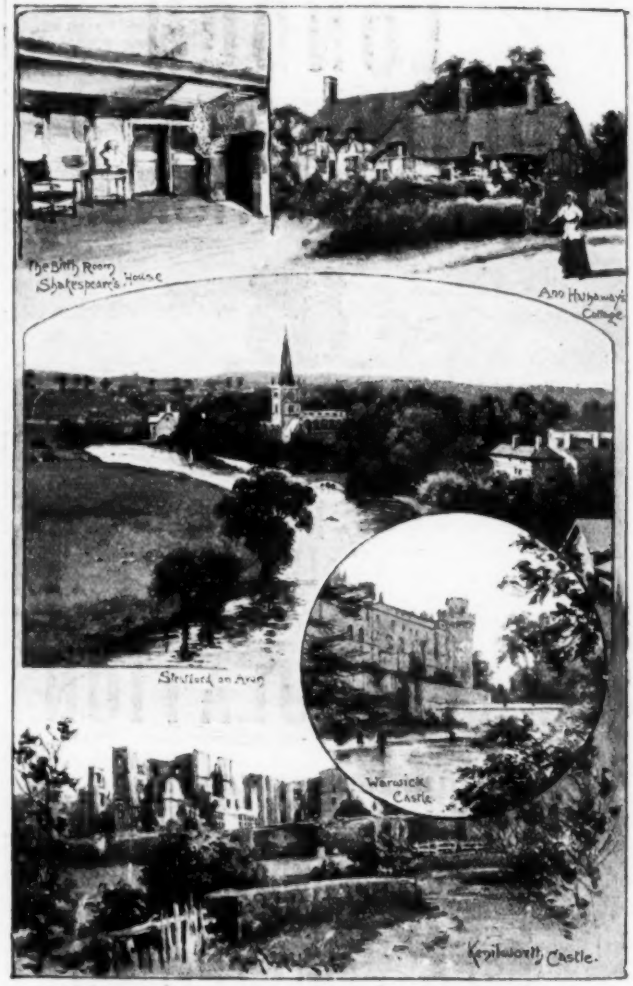
A common mistake is making too long a pause at the end of each inspiration; the halt should be of the shortest possible duration.

Deep-breathing exercises should not immediately follow such vigorous work as running, lunging, or jumping. A spell of ordinary marching or marking time should succeed such exercises till the children are again breathing quietly. Among the most useful respiratory exercises are:—

Arms sideways raising (with or without heel raising); arm parting (from the forward raise position); arm circling (raising forward and upward, lowering sideways and downward).

ATTENTION.

| *Incorrect Position.* | *Correct Position.* |
|---|---|
| Head thrown back, abdomen thrust forward, weight on heels. | Head erect, chin drawn, chest prominent, weight on fore part of feet. |

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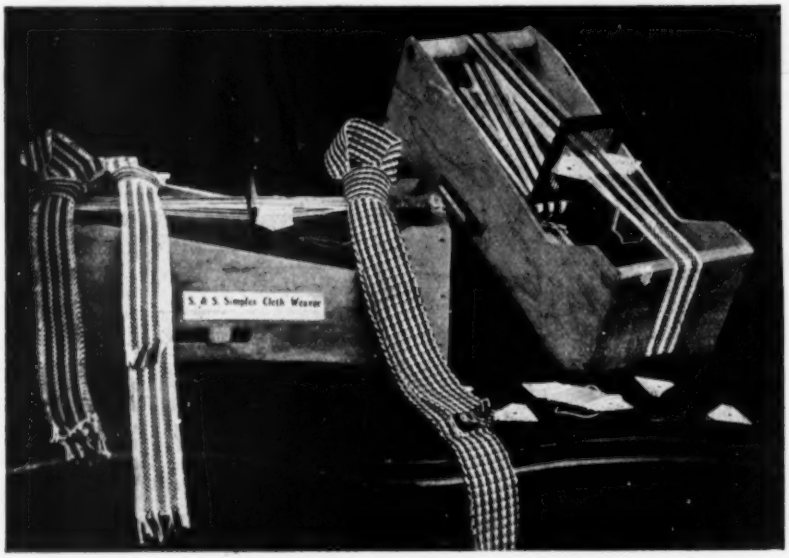
We have been experimenting for the past few weeks with a small appliance which takes the form of a simple weaving machine, and which has produced under our superintendence a very creditable necktie that we shall not scruple to wear in Town. Our illustrations will show very clearly not only the general appearance of the Simplex Weaver, as the appliance is named, but the unfeigned delight of little workers when called upon to make practical use of it.



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*Medical Supervision in Schools. By Edward Millar Steven, M.B., Ch.M. (Edin.). (Bailliere, Tindall, and Cox. 278 pp.)*

It is a big undertaking to compress into a few words an account of the medical inspection methods of many countries. Dr. Steven has succeeded. The book opens with the oft-repeated statement that the sins of the fathers, etc. It is about time that this old prediction was called in question. The whole trend of opinion amongst those who have paid particular attention to the problem of heredity is that acquired characteristics are not transmitted. It is a pity that Dr. Steven should begin his book by quoting and supporting such a statement. The defence of medical inspection of school children is not in need of such arguments. It can find enough justification in fact without resort to sentiment. The objects of medical inspection are much more than those outlined by Dr. Steven. For instance, not the least important object of medical inspection is the establishment of definite relations between the school and the home life, and the teaching of simple habits of cleanliness and hygiene. Indeed, there are some who would regard the amelioration of definite cases of disease as of minor public importance in comparison with the more general neglect in matters of good clothing, cleanliness, and sleep. In discussing the English scheme it is not made sufficiently clear that the whole cost falls upon the rates raised by the Local Authority, and that any development beyond a perfunctory inspection is absolutely optional. More than a third of the book is devoted to the description of the English scheme, but not a line about the problem of medical inspection in rural schools. The London scheme and the Bradford scheme are considered in some detail, and a few pages are devoted to the description of the Cambridge Dental Institute. It is interesting to note that no difficulty is experienced with the children. They submit to the operation of the dentist quite bravely. A similar experience has attended the dental clinics of Germany. Many of the forms used in Bradford and London are printed *in extenso*, and will be useful to authorities desiring to benefit by the experience of these two cities. The school clinic at Bradford is described. Here cases of bad eyes and ears, skin diseases and ringworm, are treated free of cost. If spectacles are necessary, these are provided by a firm in the city under a contract with the Education Committee. The spectacles ordered are sent to the Education Authority, and the medical officer satisfies himself that they are correct before handing them to the child. The cost of the glasses, which never exceeds three shillings, and is often much less, is recovered from the parent by the attendance officer. If the parent cannot pay, the glasses are given. The success attending the open-air schools, both in Bradford and in London, is well emphasised, and magnificent results are claimed for the London schools for mentally defective children. Details of medical inspection in Germany, America, Canada, and Switzerland are given, and are most useful for reference.

In Germany the great feature is the installation of school baths. The German eye clinics and teeth clinics, and the schools for mentally defectives, are well treated. It is interesting, in view of the much-vaunted success of the German methods, to note that, according to Dr. Steven, much more distress in the shape of abject poverty as evinced by the pinched faces, eager, hungry expression, and sparkling eyes exists in enlightened Germany than in most of the civilised countries of Europe. The children's club, or Kinderort, at Frankfort might be advantageously initiated in England. It is interesting to note that in Toronto, Dr. Sheard, the chief medical officer, has taken up a position antagonistic to school medical inspection. His remarks on diphtheria, scarlet fever, and drinking-waters—from the English standpoint, at any rate—seem quite absurd. Forty per cent. of cases of scarlet fever are stated to have diphtheria bacilli in the nose. A whole ward is frequently examined in the London Fever Hospital, and perhaps one patient out of twenty will show the presence of diphtheria bacilli. Dr. Sheard h s seemingly mistaken other bacilli for diphtheria organisms.

For the mass of detail, all of which is most interestingly set forth, the book itself must be consulted. It is an excellent book, and will help all who are interested in medical inspection, and especially so during the initiation of some new scheme or development.

*Plutarch's Life of Alexander. North's Translation. (Macmillan and Co.)*

It may be doubted whether any list of the "hundred best books" has yet been published which does not include Plutarch's *Lives*. This perhaps is not to be wondered at, because the work remains as a model of what a collection of biographies should be; yet it is a little remarkable that the best English dress in which it has appeared dates from the latter part of the sixteenth century, and is itself a translation from a translation. There are probably thousands of ordinary persons who have read the *Lives*, and although nine-tenths of them at least have read them in North's translation, it would be fairly safe to say that very few know anything about the time or personality of Sir Thomas North, and still fewer that his version was an English rendering of a translation from the Greek made by Amyot, a tutor of the sons of Henry the Second of France, and subsequently Bishop of Auxerre. The life of Alexander the Great, as presented in North's version, is now issued as a thin volume in Messrs. Macmillan's English text-books for use in secondary schools, and Mr. H. W. M. Parr, M.A., has edited it and supplied it with all the necessary helps for the junior student of literature: an introduction on "The Book and its Translators," another on Alexander's place in history, a chronological table of dates, a budget of useful notes, and a glossary, the necessity for the last-named arising from the more or less archaic language of North. Mr. Parr's commentary on the character of Alexander himself, and his place as a ruler, is couched in quite the right spirit of judicial impartiality. The publishers have supplied the book with a useful folding map, which enables the reader to follow the narrative with ease and intelligence, and to obtain a definite idea of the extraordinary genius which carried a Greek ruler, in the fourth century before Christ, half-way across the continent of Asia, in an insatiable thirst for conquest and glory.

*Poetica, a Book of English Verse for Repetition. Edited by John Ridges, M.A. (Blackie and Son.)*

In *Poetica* the editor, Mr. John Ridges, has aimed at providing in a single book a selection of representative English verse suitable for school boys to learn by heart during the three years ending at about the age of fifteen or sixteen. The book is accordingly divided into three parts, the first of which is made up of seventeen poems taken almost entirely from writers of the nineteenth century, and beginning with "To the Cuckoo" by Wordsworth and "Rosabelle" by Scott, and ending with "Saint Brandan" and "The Forsaken Merman" by Matthew Arnold. The second part includes no fewer than thirty-two poems, ranging from that fine old typical ballad "Sir Patrick Spens" and the eighth canto of the second book of Spenser's "Faery Queene" to "Clifton Chapel" and "He Fell among Thieves," both by Mr. Henry Newbolt; while the third and most advanced part opens its selection of forty-two poems with Shakespeare's "Blow, blow, thou Winter Wind" and "Love," and comes to a close with "The Struggle" by Clough and "Rugby Chapel" by Matthew Arnold. Even a meagre description of the contents like this serves as an indication of certain views of Mr. Ridges upon a subject about which he evidently has strong convictions, and is not afraid to declare them. Thus he firmly believes in the old classical tradition of boys being set to learn by heart substantial passages of good literature, although he is sufficiently abreast of modern "method" to know that the younger the pupil the more familiar should be the language of the passages selected; in other

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words, the writers drawn upon should be those of his own, or very nearly of his own, generation. And when he says that he would have boys learn a definite number of poetical pieces in each of their later school years, and confirm them by frequent repetition until they were word-perfect, in the complete assurance that with age and experience such extracts would become filled with vitality and atmosphere, we are quite at one with him. The present writer, indeed, well remembers many such passages which he learned, parrot-like, at school, and which have since grown with the increasing maturity of his mind until their full and inner meaning is his, and he can now appreciate the beauty of their metaphors and other figures, and the exquisite felicity of their diction. Mr. Ridges shows much judgment and taste in his selection of passages suitable for his particular purpose, and teachers in want of a new book of this kind will do well to give a careful examination to *Poetica* before deciding upon their choice. There are indexes of authors, and first lines, besides capital portraits of Shakespeare, Milton, Shelley, Wordsworth, Scott, Keats, Tennyson, and Browning.

*The Cruise of the "Cachalot." By Frank T. Bullen, F.R.G.S. (Blackie and Son.)*

The publication of a new and cheaper edition of *The Cruise of the "Cachalot"* reminds us of the wide and generous welcome which has always been accorded to a book of adventure written at first-hand and in vigorous and lively style. In the last fourteen or fifteen years Mr. Frank T. Bullen has given us a good many volumes descriptive of life at sea, but nothing better nor more vivid than this recital of life on board a South Sea whaling ship at work in its hunt after what is perhaps the fiercest of the great cetaceans. The principal charm of his writing arises from the fact that he is always recounting his own actual experiences as a seaman, and from that standpoint it is certain that an interested public is never likely to hear more than it wants. In this particular case, the subject, that of the sperm-whale industry, is one of which only a very limited number of people have any practical knowledge, yet, as Mr. Bullen points out in his introduction to the book, it has yielded a very substantial revenue to those who have invested their money and labour in it. Moreover, Mr. Bullen appears to know only two other works on the subject, and both these are now more than half a century old, are no longer in print, and deal with the subject mainly as a branch of the science of natural history. It ought to be somewhat wounding to our national pride as a race of seamen to read that the greatest success in sperm-whale fishing is still to be placed to the credit of Americans, under whose tuition it was found necessary to train English crews when at last our own fishermen determined to enter into the trade; and the present unsatisfactory state of affairs and the rapidly growing decadence of the business seem to suggest that the time is ripe for a further and more profitable development of the work on modern lines, and with the aid of the most recent inventions. A curiously interesting sidelight on history may be noticed in the statement that the depredations of the notorious *Alabama* in the American Civil War were largely made upon ships in the sperm-whaling industry, and that no inconsiderable part of the Geneva award against this country was in respect of the losses sustained by the whalers, although Mr. Bullen is strongly of opinion that many "land-sharks," without one jot or tittle of lawful right, shared in the spoils, and gravely doubts whether some of the real sufferers succeeded in establishing their first claim. The frontispiece to the present edition, representing a desperate and deadly conflict between a sperm whale and a gigantic squid, is so good as to be worthy of separate mention.

*Some Famous Women. By Louise Creighton. (Longmans, Green, and Co.)*

An admirable little book of biographies of great and good women, twelve in all, opening with that beautiful and lovable character of early English days, St. Hilda of Whitby, and closing with Queen Victoria. All are English women, with the single exception of Jeanne D'Arc, to whose work for her country and to whose purity of character and single-mindedness of purpose Mrs. Creighton pays the most gracious of tributes in the following words: "She seems to me to stand apart from all other women, like a beautiful vision for our delight and reverence. But she is like all other good women in this that she did the thing that lay before her. Without fear, in perfect simplicity, she took up the task to which she felt she was called, and went straight on without looking back, even to death." The remaining nine whose biographies are here given are Joan "the Fair Maid of Kent," Margaret Beaufort, Rachel Lady Russell, Elizabeth Fry, Mrs. Somerville, Lady Julia Inglis, Florence Nightingale, Mrs. Bishop, and Sister Dora—all of them worthy models of one or other of those virtues of self-sacrifice, and the performance of duties which lay near to their hands, that the best women have shown in all countries and in every age. Good as are the chapters themselves, we think the introduction is still better, in that it shows that duty is much the same to the lowest as to the highest, or as Milton put it—

"They also serve who only stand and wait,"

that in some the objects of their beneficence have been the poor and suffering, in others the call has been to the duties and cares of home itself, and in others yet again, the mainspring has been an absolute self-devotion to the life-work of their husbands. Mrs. Creighton, too, utters an invaluable warning when she reminds her readers that it is by no means always the best women that have been most talked about—a phrase which is excellently calculated to stimulate many a girl, especially those in humble or obscure circumstances, to strive to do her best and play her part nobly and well. We can quite understand that some girls would prefer a book of another sort than this as a gift or prize, yet we can conceive no reading that is likely to leave a finer, deeper, and more abiding impression upon the youthful mind. There are numerous pictures in the book, some of them portraits and others views, which tend to increase its general attractiveness.

*History of the English Language. By O. T. Williams, M.A. (Cassell and Co.)*

In this book the author, Mr. O. T. Williams, M.A., has aimed at supplying a brief sketch of the *History of the English Language*, which, from its unusually condensed style, we imagine must be intended for the use of intermediate students rather than of beginners. There is, however, no preface or introduction of any kind, so that we have to make our own inferences on this point from the character and substance of the contents themselves. An examination of the different sections readily shows that the writer is well equipped in the subject, and that, although he proceeds on no conventional lines, he has been successful in producing a sketch which will afford plenty of exercise for the mental digestion of the student, and which, being abreast of the most modern teachings of philology, will not have to be discarded, like so much literary jetsam, when he proceeds later to larger and more comprehensive works. The arrangement and order of the text may be indicated in a few words. First there is a section on the origin and development of the language, followed by another on changes in pronunciation and spelling, and this is succeeded in turn by others on changes in grammar and changes in vocabulary. It is by no means an easy task to provide a text-book on so complex a subject within the compass of fifty large pages, yet Mr. Williams has achieved no inconsiderable amount of success, and his sketch, more particularly if used as the basis of a series of lectures or oral lessons from a thoroughly good teacher, should be the source of much accurate and profitable knowledge. An analytical language such as English invariably has peculiar difficulties of its own, and these are multiplied the more in proportion as the language is itself a conglomerate descendant from three or four others. Case-endings and verbal inflections gradually become lost through processes of attrition, the same word reaches us through more than a single channel and so in time wears varied forms, some words are constantly falling into disuse and other new words being adopted, and so on. The simple explanation of all these different integrations and disintegrations is that a language is a living thing, and therefore in a constant state of flux, birth and death being unceasingly in progress in almost every part of it. All this is strikingly shown in Mr. Williams's pages, which are most appositely illustrated throughout by extracts from writers in various parts of the country, and at different stages in English history. It ought to be unnecessary to add that no student should take up the book, or indeed any book on this subject, with the hope of beneficial results, unless he has already acquired a good working knowledge of modern English grammar and of the history of England.

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